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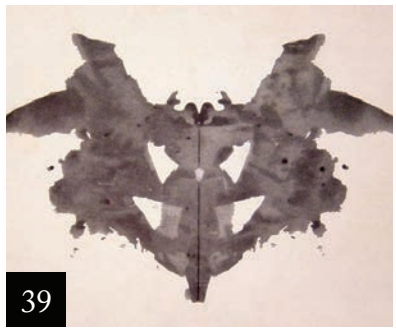

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"… promotes scientific inquiry, critical investigation, and the use of reason in examining controversial and extraordinary claims."

[FROM THE EDITOR

Gratitude for All You Skeptical Inquirers Out There

This being my first column as editor of Skeptical Inquirer, I'm feeling many emotions. I feel nervous, appreciative, thrilled, lucky, and above all grateful.

First and foremost, I'm grateful to Kendrick Frazier. I've long been a fan of this magazine, and I now have an even greater appreciation for its rich history. How did Ken put out so many marvelous magazines for so many decades? I recently reread the "Remembering Ken Frazier" tribute issue (January/February 2023), as well as the tributes that overflowed into the following issue, and one thing is clear: people love Ken. He influenced so many of us through these pages, and he developed and amplified countless skeptical voices, including mine. There would be no Skeptical Inquirer without Ken, and this magazine will always be an extension of his intellect and compassion. The best way I could think to honor Ken was by interviewing his wife, Ruth Frazier, which you'll find in this issue.

My considerable gratefulness also extends to Stuart Vyse. The magazines published during his time as interim editor have been fantastic, covering both important stories as well as fun topics. Although he could have continued on as the editor, he chose instead to be on the search committee. I feel lucky that Stuart showed me the ropes. Check out the News and Comment section for more about Stuart's time as interim editor.

As executive director of the Committee for Skeptical Inquiry, Barry Karr (who started off stuffing envelopes for CSICOP) has been a major influence on this magazine for several decades. The amazing work he does to put CSI's conference together every year cannot be overstated. He's truly one of the most influential people in the skeptical movement, and I'm immensely grateful for all he's done to help me get started with this magazine and organization. Similarly, over the past month, the people who have really helped this magazine issue come together include Benjamin Radford, Julia Lavarnway, Nicole Scott, and Alexander Nicaise. I'm so thankful for all they've done for the magazine, and I'm thrilled to be working with them all. Robyn E. Blumner, Edward Tabash, and many others at CFI have given me a warm welcome and have also helped to make this job a delight.

I've also come to truly appreciate the dedication and value of the columnists and everyone else who writes for the magazine. We have many submissions from an array of skeptical inquirers, all sharing the same passion for critical thinking. Most of these pages are filled by writers who decide for themselves which topics warrant skepticism.

As for the cover story of this issue, three clinical psychologists—James Wood, Teresa Nezworski, and Howard Garb—critique the most identifiable assessment tool in psychology, Rorschach Inkblots. They provide a twenty-year follow-up to the book *What's Wrong with the Rorschach*, which they cowrote with Scott Lilienfeld, CSI fellow and personal hero of mine. Inkblots normally don't have intentionally hidden images—but this cover does. Can you find all thirteen?

—Stephen Hupp

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Our Vision: A world where people value evidence and critical thinking, where superstition and prejudice subside, and where science and compassion guide public policy.
Our Values: Integrity, Courage, Innovation, Empathy, Learning, and Wonder.

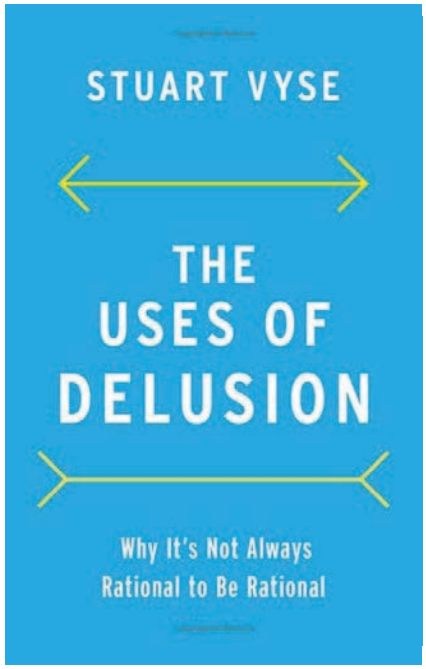
Stuart Vyse Finishes Spectacular Tenure as Skeptical Inquirer's Interim Editor

Stephen Hupp

With the devasting loss of Skeptical Inquirer's beloved longtime editor Kendrick Frazier, the magazine needed someone to take over the role as interim editor. Stuart Vyse stepped up in a big way. With a master's in English and a doctorate in psychology, Vyse taught at Connecticut College for most of his career. He's published several books, including the award-winning *Believing in Magic: The Psychology of Superstition* and more recently *The Uses of Delusion: Why It's Not Always Rational to Be Rational.* His words first appeared in SI in 1997 and later became a regular fixture through his "Behavior & Belief" column. A fellow of the Committee for Skeptical Inquiry, Vyse also serves on its Executive Council.

Vyse led the magazine through four issues, the first being a thoughtful tribute to Frazier (March/April 2023). Next, the magazine addressed "medical pseudoscience around the world" through a special issue with contributors from India, Hungary, Austria, and Germany. The cover story in his third issue tackled the "ideological subversion of science," becoming one of the most widely read articles in the magazine's history. The cover story of his final issue explored the broader topic of "persuasive bullshitters." Through all these magazine issues, other articles also touched on tantalizing topics familiar to SI readers such as astrology, cryptozoology, and parapsychology.

Vyse's legacy will continue to shape the magazine for many years to come. As interim editor, he officially accepted an additional twenty-five articles that were not published during his four-issue tenure; these articles provide the content for much of the current issue and will continue to be published throughout next year. He also shaped the process involved in putting an issue together, served on the search committee for the new editor, and provided considerable support and mentorship throughout the transition. Here are a few words from the people who worked with him the closest over the past year:



"The editions produced under Stuart's steady and surefooted editorship were distinctive, sophisticated, absorbing, and even brave. He was willing to stand up for science even when some inconvenient truths failed to fit this year's fashions (to borrow from Lillian Hellman). Everyone who worked with him—me included—was honored and delighted to do so. Thank you, Stuart!"
—Robyn E. Blumner, CFI president and CEO

"THANK YOU to Stuart for really stepping up in such a fantastic way. And thanks for how you handled the backlog, the filing system, the procedures for pushing manuscripts, the help with the search, and the way you eased the new editor into the role. You really were the perfect choice to take the reins!"
—Barry Karr, CSI executive director

"I am so incredibly grateful that Stuart took on the task of picking up the editorial pieces after Ken's sudden death. I already knew he was a wonderful writer and a great person to work with from his contributions as an SI columnist, and my opinion of him only grew during his eight-month tenure as SI's interim editor. He handled the extremely difficult job of leading the magazine with an eye on its future while honoring Ken's longstanding legacy. He performed his duties with obvious care and dedication. I am so glad I will be able to continue working with him in his capacity as a columnist for SI."
—Julia Lavarnway, SI managing editor

"Stuart has been truly incredible, and I could not have asked for anyone better to pull the loose ends together when

we needed it most. He smoothly transitioned into his editor position and produced further quality issues of the magazine. A pleasure to work with, and I wish him well."

—Alexander Nicaise, SI art director

"Stuart's stewardship helped SI navigate some rough waters. I'm thankful he will continue his excellent SI column and hoping that he will be available now and then to offer informal suggestions and counsel on editorial matters as they come up."

—Benjamin Radford, SI deputy editor ■

Stephen Hupp is editor of Skeptical Inquirer.

Shakeup among German Skeptics

Stuart Vyse

On May 20, 2023, the German Skeptics group Gesselschaft zur wissenschaftlichen Untersuchung Paraweissenshaften (GWUP) gathered to elect their new board members, and the result rocked the European skeptics community. Amardeo Sarma, the longtime chairman and founder of GWUP, announced that he was stepping down as chair and endorsed a slate of candidates, including Rouven Schäfer for chair, but Schäfer was narrowly defeated by Holm Hümmler in a move seen by several observers as a victory for progressive post-modern philosophies that are sometimes in opposition to science, free inquiry, and reason.

Very soon after the election, a "GWUP rogue" account was launched on Twitter sporting a logo with the letters GWUP displayed upside down. The account bio says it is not connected with GWUP or run by GWUP staff and urges people to "come for the facts, stay for the snark." In a long Twitter thread in English, the GWUP rogue account claimed that Hümmler ran on the slogan "I want my old GWUP back," but the rogue account interpreted the change of leadership as an ideological victory: "Postmodernism, Critical Studies are now discouraged topics within #GWUP, as members are discouraged from critically engaging with them publicly. This resembles the 'Binnenkonsens' approach in [Germany] that shields pseudomedical practices like homeopathy from scientific scrutiny." In addition, the GWUP rogue account expressed the worry that "A skeptics organization that imposes self-censorship risks losing long-term support from the scientific community."

It will be interesting to watch how this apparent schism within the German skepticism movement plays out. As troubling as the situation may appear, observers can take some comfort from the very last line of the rogue account's tweet thread: "Nevertheless, the election was conducted through a democratic process." ■

Stuart Vyse is a psychologist and author of *Believing in Magic: The Psychology of Superstition*.

Florida Psychology Courses, Sexual Orientation, and Gender Identity

Bertha Vazquez

The first two weeks of August appeared to be confusing for public school employees and families across Florida. It all started when Florida's 2022 Parental Rights in Education Law was expanded this spring to include all grade levels. The original law—commonly known as the Don't Say Gay Law—restricted class instruction and discussion about gender identity and orientation from kindergarten through third grade. The 2023 amendment expanded the restrictions to include grades four through twelve, citing that "instruction on sexual orientation or gender identity is prohibited unless such instruction is either expressly required by state academic standards … or is part of a reproductive health course or health lesson for which a student's parent has the option to have his or her student not attend."

The College Board—the nonprofit organization that develops the widely used Advanced Placement (AP) courses—reacted to the change on August 3, announcing that Florida's Department of Education essentially banned important components of its AP Psychology course. The course "asks students to 'describe how sex and gender influence socialization and other aspects of development.'" First taught in its entirety in Florida thirty years ago, more than 28,000 Florida students took the course last school year.

The College Board's AP Psychology Development Committee defended the course content: "As a committee, we affirm that gender and sexual orientation are essential, longstanding, and foundational topics in the study of psychology. College-level introductory psychology students will encounter gender and sexual orientation as topics of study."

In response to the College Board's announcement, Florida's Education commissioner, Manny Diaz, wrote a letter to school officials the following day, August 5: "The department believes AP Psychology can be taught in its entirety in a manner that is age and developmentally appropriate and the course remains listed in our course catalog."

The ambiguous statement left many school districts in a catch-22. Teaching the course in its entirety may violate Florida law and could potentially lead to teachers losing their teaching licenses, while omitting the illegal content would mean that the students who complete the course may not receive AP credit. As a result, seven of the state's largest school districts decided to offer alternative courses. This last-minute turn of events left many teachers scrambling to learn a new curriculum. Representatives from Broward and Miami-Dade school districts said they would continue to offer the complete AP Psychology course.

On August 9, Diaz appeared to reverse his position, stating, "high schools may teach Advanced Placement Psychology without running afoul of Florida law—including material on sexual orientation and gender identity." This has prompted some school districts, such as Palm Beach County Public Schools, to reverse their previous positions. Other districts have decided to offer alternative courses, including International Baccalaureate Psychology or the Cambridge AICE course. The Florida Education Association has asked Díaz to state "clearly and unambiguously" that nothing in the course violates state law. The Florida PTA also asked the department to clarify its view.

At this time, no additional clarification was given by Florida's Department of Education. Ultimately, because the Parental Rights in Education Act fails to provide clear definitions for crucial phrases such as "age appropriate," "developmentally appropriate," or "classroom instruction," nearly any type of classroom discussion or material can be called into question, and educators can be charged with third-degree felony offenses for a transgression. As a result, educators in Florida remain confused about what is and isn't permissible under the law, and many are self-censoring. This will have broader educational implications as some students may not be able to benefit from healthy classroom discussion and debate. ■

Bertha Vazquez is the director of education for the Center for Inquiry.

Uri Geller Tricks *The New York Times*

Benjamin Radford

When the respected *New York Times* published a curious article by David Segal titled "The End of the Magic World's 50-Year Grudge" on July 9, the skeptical community took notice. When skeptics read the deck ("In 1973, Uri Geller claimed to bend metal with his mind on live television. Skeptics couldn't beat him. Now they've joined him.") they were baffled and outraged.

The first of these statements, about Geller claiming to bend metal with his mind, is demonstrably true. The second, that "skeptics couldn't beat him," is arguably true—depending of course on what exactly Segal means by "beat him." If "beat" means *expose as a likely fraud*, then skeptics have indeed beaten Geller. Badly. For decades. If instead "beat" means that Geller has admitted once and for all, clearly and incontrovertibly, that he's been using magic tricks (or Geller is no longer in the spotlight), then of course they haven't. Geller remains unbeaten and will remain so as long as he has an internet connection and writers such as Segal to help promote him.

The last statement—that skeptics have "joined him"—is so jaw-droppingly wrong that I had to read it twice and look for some caveat buried deep in the article as to what Segal means by *joined*—let alone *beat*. As a member of CSICOP, now CSI, for over twenty-five years, I have a pretty good sense of where skeptics stand on Geller, and it's not with him at all.

Segal pulls a goalpost-moving bait-and-switch trick in his piece; soon it's clear that he's talking about the *magic community*, not the *skeptical community* per se. There is, of course, significant overlap, and there is a robust history of magicians (including Harry Houdini, James "The Amazing" Randi, Jamy Ian Swiss, Penn & Teller, Banachek, Mark Edward, and many others) who

are committed skeptics. Segal, when it suits his purposes, conflates the two and instead of interviewing any prominent skeptics—you know, the ones mentioned below the headline—to ask about the movement's remarkable embracing of Geller, he focuses on one magician, Australian Ben Harris, who has a new book out titled *Bend It Like Geller*. Harris is depicted as a onetime-skeptic-turned-believer ("once among Mr. Geller's most avid debunkers") who now endorses Geller's abilities.

The article was widely savaged by skeptics and the public alike, from D.J. Grothe to Steven Novella and countless others. The thrust of the piece is Geller's relationship with the magic community and James Randi in particular. Perhaps the most baffling comment in Segal's piece is that Randi's "vitriol is a little hard to fathom."

On the contrary, Randi's (and other skeptics') vitriol is not hard to understand at all: Geller repeatedly sued Randi and CSICOP, costing both fortunes and friends in the process. And why? Because Randi dared to tell the truth about Geller. Because Randi's moral compass on this issue was steady. He cared about the difference between right and wrong and was willing to call out what he viewed as unethical behavior by Geller.

On his *Friendly Atheist* blog, Hemant Mehta asked, "Why is the *Times* trying to salvage the reputation of a man who has spent his life spreading lies? Society isn't better off because men like Geller convince people telekinesis is real. And if he actually did have those powers, what does it say about Geller that he's spent his entire career performing the most mundane party tricks rather than helping others?"

As for magicians, D.J. Grothe notes that there is a grain of truth to the claim that the magic community—not, notably, the *skeptical* community, as Segal claims—joined Geller. Says Grothe:

> Geller was and is a charming con man who did not get rich and famous by doing magic tricks but by conning hurting people susceptible to his fictions. … Geller's history of fraud is surreally romanticized in the *New York Times* profile—he's audaciously portrayed as a mere magician somehow performing his deceptions in the public interest!

Magician Jamy Ian Swiss described the *Times* piece as "a disgusting promotional piece masquerading as journalism by a writer simultaneously foolish and fooled—not by a magic trick, but by a sociopath."

Interestingly, Segal not only mischaracterizes the skeptical community's response to Geller but also the premise of the book that serves as a basis for the article. I was unable to get a copy, but

Image Credit: David Parry / PA Wire

a review of Harris's *Bend It Like Geller* appeared in the August 2023 issue of *Genii: The Conjurors' Magazine*. Contrary to Segal's characterization of the book as some sort of defense of Geller, the review makes clear that the book is in fact about the spoon-bending effect (or trick) he popularized. The point of the book is *not* that Geller's tricks demonstrated genuine psychic abilities but instead that "It is rare that a new kind of effect—indeed, a new effect pioneered by Geller—comes to be." Basically—unlike, say, production, vanishing, levitation, transformation, etc.—spoon bending simply wasn't thought of as a magical effect before Geller popularized it; since then, magicians including Banachek and Morgan Strebler have refined and developed it.

Mentalist Dustin Dean, a colleague of Harris's, noted in a July 13 blog post titled "Debunking the Uri Geller *New York Times* Story" that "If you only read Segal's article, Ben's new book is evidence of a change of heart from the former skeptic. But while Harris and Geller certainly are no longer enemies, *Bend it Like Geller* does not shy away from exposing the simple tricks Geller is thought to be using." (The book title is not meant as an homage to Geller specifically but is instead a clunky and stale reference to a popular 2002 British sports comedy film *Bend It Like Beckham*; in soccer, *bend it* means to kick a ball so it curves around an obstacle.)

Dean quotes Harris's response to the controversy, and it's not kind to Segal:

> My book is about the history and evolution of bending spoons. It is a researched collection of *trick* techniques. This was not made clear in the NYT piece. [Publisher] Vanishing Inc. did not promote a book about Geller, they published my book, *Bend It Like Geller*. It is an exposé of methods for spoon bending. It is not a Geller biography, it is a skeptical work. What was supposed to be a story about my book and a celebration of spoon-bending's allure to the modern magician for over fifty years, turned into something else. But that's just the way the cookie crumbles. Segal wrote a confronting piece. It's his job. The fallout is the result.

Harris's acknowledgment that Segal's article "was supposed to be a story about [his] book" is revealing, and it should be noted that this topic is not Segal's usual beat. He's a tech and business reporter, and the world of magic and skepticism seems a bit afield for him. Sadly, he signals his indifference to truth several times in his piece, casting Geller's critics as petty, misguided, and trying to drain magic from the world: "watching the Geller haters now is like watching people run into nursery schools shouting that there is no Santa Claus." Segal seems unconcerned with all the harm that can come from these false beliefs. Unlike Santa Claus, Geller's audience is made up of adults—often focusing on important world events—instead of children and party tricks (see the related Commentary about Geller in this issue).

My interactions with Geller have been limited and tangential, so the fight isn't as personal for me as it was for Randi. Nevertheless, I do get angry sometimes. I do express vitriol, especially at what Susan Gerbic has so aptly called grief vampires—psychics who exploit grieving people and families for profit. Also, I express vitriol at the psychic detectives who claim to be able to find missing persons—yet conspicuously fail time and again, while wasting police resources and giving families false hope. Our discomfit, irritation—and, yes, sometimes anger—toward such charlatans is not a sign of "having a grudge." It's a sign of having a conscience.

So, no. Skeptics—including and *especially* Randi—may or may not have beaten Geller, but we sure as hell didn't join him. Nor, for that matter, did Ben Harris. The only one who praised and promoted Uri Geller as a psychic was David Segal in *The New York Times*; everyone else saw through the con. ■

Benjamin Radford is deputy editor of Skeptical Inquirer.

Findings Reported from the Largest Loch Ness Monster Search in Fifty Years

Stephen Hupp

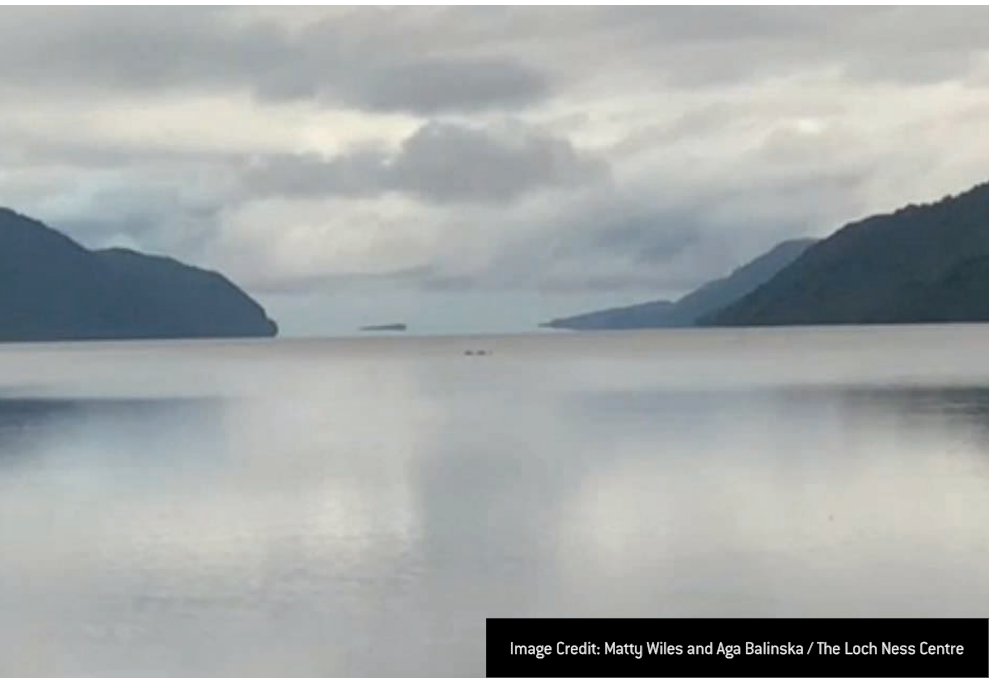


Image Credit: Matty Wiles and Aga Balinska / The Loch Ness Centre

Billed as the "largest surface search" for Nessie in over fifty years, Scotland's Loch Ness Centre organized Quest Weekend, an event in the last weekend of August. Volunteers lined the banks equipped with cameras and anticipation to search for the elusive beast. On August 31, a few days after the search, the Centre shared the initial results. Specifically, two of the volunteers captured a grainy photo of some "moving humps" in the far distance. A virtual volunteer, monitoring a video feed, also witnessed movement in the water described as "a large shadow just under the surface," and another virtual volunteer witnessed a "black humpy round object that rises and submerges." Multiple screenshots supported the claims about a shadow and an object in the water. Also, a boat equipped with a hydrophone scanned the water for unusual sounds. As reported by the Centre, "Four mysterious and previously unheard loud noises from the depths of the loch were identified. Regrettably, amidst the excitement, the crucial moment wasn't captured on record." So far, the results of the search have been underwhelming, but SI will report on any future revelations. ■

Stephen Hupp is editor of Skeptical Inquirer.

STATEMENT OF OWNERSHIP, MANAGEMENT, AND CIRCULATION (Required by 39 U.S.C. 3685)

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Cambridge Disinformation Summit

WENDY M. GROSSMAN

Close to the end of the Cambridge Disinformation Summit,[1] an audience member posed a conundrum: What about flat earth belief? People arrive at adulthood with it thoroughly "prebunked" at home and in school. It's been thoroughly debunked, fact-checked, and disproven—yet some people still believe it. What's up with that?

British skeptic Michael Marshall[2] could have helped answer this question; his talk "Circular Reasoning: The Rise of Flat Earth Belief"[3] explains what he learned over several years of hanging with those believers. But that's one case study, not a principle.

In answering the question, Stephan Lewandowky, chair in cognitive psychology at the University of Bristol, explained it as an under-researched aspect of social media. Flat earth believers are spread so thinly in the general population that they could all go for years without meeting another one. But online they find each other, and suddenly there's a community of 1,000 who can meet online every day.

"The moment you have community, it becomes entrenched, and external debunking is part of the conspiracy," Lewandowsky said. This, he added, is something the internet has brought that we've never had before.

Andrea Liebman, a senior analyst at the Swedish Psychological Defense Agency, added, "People don't understand how things work." If you were challenged right now—this second—could you explain how you know the Earth is round?

Liebman's job doesn't exist in most countries: her agency was set up in 2022 to increase the resilience of the Swedish population against malign influence directed at the country by foreign actors. Another country pursuing a similar line is nearby Finland. At its National Cyber Security Center, Jussi Roivanen trains civil servants to deal with campaigns targeting Finns. "I don't see that we're winning any war," Roivanen said. "There was a disinformation problem 200 years ago, and there will be in future." Roivanen placed himself at one end of a spectrum that ran through the conference. The other end was expressed most clearly by former propagandist (his description) Stephen Jolly, Professeur Agrégé de Géopolitique at France's Rennes School of Business who called disinformation "an existential threat."

These two takes sound incompatible, and no consensus emerged in either direction, but the summit's convener, Alan Jagolinzer, a professor of financial accounting at Cambridge, nonetheless came away with hope. He believes the event made progress toward the collaboration he hoped to foster, first by raising awareness and building collaboration and second by bringing a business framing to disinformation.

It may seem surprising that a conference on disinformation was called by a professor of financial accounting, but, he says, "When you place disinformation in the context of financial fraud, people don't like it." He thinks the financial framing also helps resolve the inevitable questions of censorship and free speech. "In that context, people are very comfortable with accountable communication." It is, at least, a way of sidestepping the polarization that comes into play as soon as you focus instead on pandemic response, climate change, or attacks on democratic institutions.

Jagolinzer's opening remarks also indicated that he has a personal connection to these issues: "Not too long ago, my nephew died from pandemic-related misinformation." To set the tone, Jagolinzer proposed identifying disinformation by six characteristics: (1) There is a malign actor or set of actors who: (2) have incentives that might generate financial, social-emotional, and/or physical benefits to (3) produce and disseminate an intentionally misleading, harmful, and typically emotionally triggering message, (4) through selected dissemination channels, to (5) a specially targeted audience, (6) for exploitation.[4]

Jagolinzer believes these characteristics work across many settings—authoritarian politics, blocks on attempts to fix huge problems such as climate risk or the COVID-19 pandemic, and marginalizing out groups, not just his own area of financial fraud. Following this statement of the problem, the rest focused on studying it through the lens of different disciplines and considering ways to collaborate. The range of participants was fairly broad, including psychologists, lawyers, political scientists, AI developers, behavioral scientists, a former cult deprogrammer, and experts on the inner workings of adtech.

Two significant communities missing, however, were skeptics and cybersecurity experts, who have long been grappling with state-sponsored attacks that leverage individuals' vulnerabilities and twenty years ago began harnessing multidisciplinary approaches. It's long been clear that countering disinformation requires a similar multi-pronged approach.[5]

Given Jagolinzer's criteria, Jolly added context based on his own experience "doing the stuff." He sees propaganda generally as "part of a spectrum of persuasion" that includes preaching in church and advertising through to military deception. Disinformation—"the covert strategic use of untruth to effect political ends"—is part of that spectrum.

Many of the panels focused on the view from a particular sector: the psychology of belief so familiar to skeptics, manipulation through microtargeting, the incentives and profits behind disinformation, and the prospective impact of generative AI. The journalism panel was predictable in advocating fact-checking and improving media literacy. Both are frustratingly slow. In the days of the telegraph, a lie might have gotten halfway around the world while the truth was putting its pants on, but today that lie has built communities of adherents while the truth is still ordering the pants from a catalogue. AI can help identify and remove low-hanging fruit, but, as numerous critics have highlighted, there's too little effort to cover minority languages and cultures, with the result that AI is largely ineffective in the places where platforms' markets are smallest and they are least motivated to invest in improvements or even set up an office. "AI is bad for humans, good for propaganda," Jolly observed early on.

In a discussion of possible solutions, Sander van der Linden, a professor of social psychology at Cambridge and author of the recent book *Foolproof: Why We Fall for Misinformation and How to Build Immunity*, advocates "prebunking." That is, in a vaccine analogy, he believes people can be inoculated against extreme beliefs by being infected via simulations and focusing on techniques rather than claims. Later, Stephan Lewandowsky warned that inoculation theory will never be able to overcome a giant machine such as Facebook, whose profits depend on keeping people engaged and angry.

"There is a striking, strong political asymmetry in the source of misinformation. That's the elephant in the room, and I don't think we should ignore it," Lewandowsky said. In a recent paper, he found a startling difference between the news sources shared by Republicans and Democrats.

Lewandowsky nonetheless has hope: he believes the emotional component of misinformation can be harnessed to sensitize people to manipulation. In work in progress using Brexit as a hot-trigger issue, he is showing that if you remind people of the things they have in common, they become less polarized.

When asked what success looks like, however, the closing panel produced little direct response. As the activist Jillian C. York said in Alex Winter's recent documentary *The YouTube Effect* (which the conference screened), it depends on what you're looking for. One person's disinformation is another's valid viewpoint—which is why Jagolinzer's approach, identifying disinformation by behavior rather than content, stands up well to scrutiny. You can, he says, sit down with someone and show how these characteristics worked in a variety of cases of known fraud such as Theranos, Enron, Wirecard, and Carillion, and then show how they apply in other scenarios such as COVID-19 misinformation, religious cults, or even gaslighting relationships.

Jagolinzer himself hopes this event is a beginning, and he's pleased to see participants already linking up to form projects. "The conference was designed to bring people together," he says, "and raise awareness that we are collectively thinking about this. … I don't know what the answers are, but the idea is to start now working in subgroups and think through some of these discussions." He is beginning work on adding disinformation risks and responsibilities to the curriculum for business leadership. "We don't teach that at all in business schools." ■

Notes

1. The agenda and speaker list are at https://www.jbs.cam.ac.uk/faculty-research/centres/cfra/conferences-events/cambridge-disinformation-summit/#item2. Video of the presentations and panels from the summit are on YouTube at https://www.youtube.com/@cambridgedisinformationsum6949/featured.

2. I interviewed Marshall for my "Letters to American" column: https://skepticalinquirer.org/exclusive/mike-marshall-born-skeptic/.

3. The talk is on YouTube at https://www.youtube.com/watch?v=6NllmmRWofM.

4. Jagolinzer has posted an introduction to disinformation on LinkedIn: https://www.linkedin.com/posts/jagolinzer_from-my-opening-speech-at-the-cambridge-disinformation-activity-7090239391251525632-l6ub.

5. I advocated this approach in a 2017 blog posting: http://www.pelicancrossing.net/netwars/2017/09/fakeout.html.

Wendy M. Grossman is a freelance writer based in London. She is founder of the British magazine *The Skeptic* and a CSI fellow. Her website is at pelicancrossing.net.

Interview with Ruth Frazier

STEPHEN HUPP

Kendrick Frazier was at the center of the modern skeptical movement from the beginning. Through the pages of Skeptical Inquirer, he shared his own wisdom, amplified the voices of notable science communicators, and introduced many new voices—one of which was mine in 2017 when he published my first magazine article. Without Ken, and without my subscription to this magazine, I would not be the skeptical inquirer that I am today. It's clear from reading the tribute articles about Ken, and from my interactions with many of the people who knew him best, that a large number of people also feel that Ken changed their lives for the better.

This issue of SI will reach many readers just as CSICon is beginning. During the conference, I'll be particularly excited to see Ruth Frazier accept the Balles Prize on behalf of Ken. In the January/February 2023 SI issue, Ken wrote, "We have a wonderful family, led foremost by my wife of fifty-eight years, Ruth, who is one of the most dynamic, warm, loving, giving, competent women I have ever known." Like Ken, Ruth has accomplished many great things. She is the former president of Futures for Children; she has been a community development consultant; and she is actively involved in the International Women's Forum. For this issue of SI, I could think of no better way to honor Ken than to interview Ruth. She graciously agreed.

The following interview is composed of questions sent in a single email, and she responded via email as well. Her responses provide insight into how this inspiring couple complemented each other in their successful efforts to make the world a better place.

Stephen Hupp: At CSICon this year, on behalf of Ken, you will be accepting the Balles Prize, which will honor Ken's lifetime of promoting critical thinking and skepticism. What would this award mean to Ken?

Ruth Frazier: Ken would be honored,

I'm sure. Gratified. And embarrassed. He was a modest man.

The prize is being given to Ken based on the impact he's had on the skeptical community and scientific skepticism. A big part of this impact was accomplished in the pages of SI. What did the magazine mean to him? What did he seem to enjoy about the magazine the most?

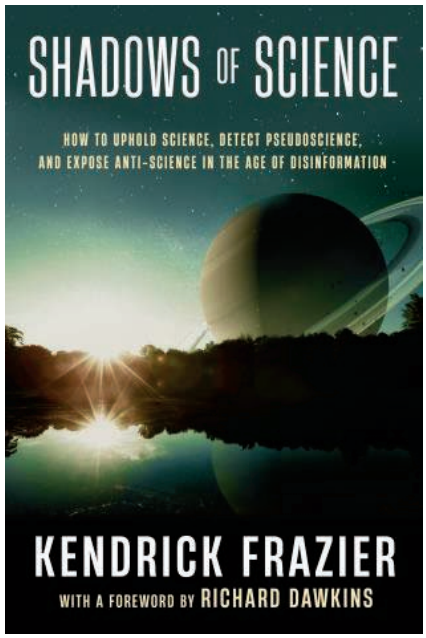
Ken edited the magazine for almost forty-five years. Each magazine was a source of interest and excitement for him. He certainly enjoyed writing his column each edition. In it he would comment on current events and/or current articles of great interest to him, and why he thought so, often with inside information from the author.

Ken thoroughly enjoyed the process of surveying the latest discoveries in science. He did this by attending many of the science conferences of the AAAS [American Association for the Advancement of Science], attending every CSICon, devouring science journals, and eagerly reading the latest submission from eminent members of the scientific community.

Can you share anything about his earliest days of working on the magazine? What was the hardest part of editing SI for him over time?

The early days were exciting! Ken wrote articles, James Randi did, Paul Kurtz did, and they took on some of the biggest fallacies of the late 1970s—UFOs, Bermuda Triangle, teaching reincarnation and astrology at a state university … all hot topics in the news. Believe it or not, the publication doesn't pay authors for submissions. Yet one of the hardest problems for Ken was having too many excellent articles and not enough pages for all of them.

Ken also wrote and edited several books, with the most recent addition being *Shadows of Science: How to Uphold Science, Detect Pseudoscience, and Expose Antiscience in the Age of Disinformation* (available this fall!). It seems like the perfect way for him to wrap up an amazing career in skepticism. What would you like to share about this book?


SHADOWS OF SCIENCE
HOW TO UPHOLD SCIENCE, DETECT PSEUDOSCIENCE, AND EXPOSE ANTI-SCIENCE IN THE AGE OF DISINFORMATION
KENDRICK FRAZIER
WITH A FOREWORD BY RICHARD DAWKINS

This book was written over the "COVID" years and was Ken's personal love song about the joys of science and his frustration with pseudoscience sneaking into the language of science without any of its methods. Ken says it so well in the last chapter:

> This is a book about both science and pseudoscience. One of them provides thousands of new discoveries and insights into the nature of the universe and life that inspire us. Some of these discoveries give us a sense of wonder and awe—a feeling of something larger and more wonderful and mysterious outside our own daily concerns. It also leads to innovation and technologies that have the capacity to improve daily lives around the world. These innovations help us to live longer and with a higher quality of life, to stay in communication with friends and loved ones everywhere and to more quickly realize the potential inside us all. The other is also interesting and beguiling, but its allure is an illusion.

From your perspective, who influenced Ken the most when it came to scientific skepticism and science communication?

Where to begin? Ken has many letters (remember those?) back and forth with Carl Sagan, Martin Gardner, Isaac Asimov, "The Amazing" Randi, and so many other noted communicators of science. He had the great good fortune to be with Paul Kurtz at the very beginning of the skeptical movement. Ken, however, was a consummate learner: he read voraciously from as many scientific sources as you can imagine, and he was an ardent clipper of articles! He bound all the journals of SI, and he used post-it notes copiously for things that interested him. He could locate an article from the past quickly, and then Ken jumped into our new world of email, texts, Wikipedia, and Google to find more current and reliable sources that he might need.

I see that you have written in SI one time, a review of Sasha Sagan's book, *For Small Creatures Such as We*. What motivated you to write the review?

We knew Carl Sagan and his wife, Ann Druyan, and Ken and she corresponded with some frequency, particularly on Ann's *Cosmos* series. Our daughter died after an epic journey down the Ganga River in India, so I was particularly interested in a "famous" daughter's observations about death of a beloved. Sasha's book was a delight.

You were a nonprofit executive, and you've been active in the International Women's Forum. What drew you to that type of work? Was there any overlap between your work and scientific skepticism?

My personal mission statement has always been to make a difference by helping others—make a difference. Not just helping others but working with them to do their own life's work. My most frequent question in consulting: What difference do *you* want to make? Community organizing for me means asking people what they want and working with them to achieve their own goals. The International Women's Forum celebrates women's leadership and is a vibrant way to connect with like-minded

women. We recently did an event around the film *Oppenheimer* in both Santa Fe and Los Alamos, New Mexico. I enjoyed the revival of the incredible combination of science and technology that made the Manhattan Project work, and its focus on evidence-based learning at such a fast pace. After a lifetime with Ken, I had no fear of calling up a famous nuclear scientist, Dr. Siegfried Hecker, to join us on a panel.

Do you think of yourself as a "skeptical inquirer," and if so, what were some experiences that led you toward skepticism? Who influenced your thinking the most?

Okay, here goes: I was a Catholic removed from much of traditional dogma but had a superior Catholic high school that served me well into college at the University of Colorado in Boulder. A few years ago, Ken and I were invited to a Reason Rally in Washington, D.C. Each speaker made more and more sense to me, including the final one, the head of atheists. I said to Ken, "I'm in." Just like that. Converted to atheism. And I have never looked back. I very much understand the comfort, the solace of religion, but the price for that is way too much in terms of what you must not question. And a questioner I have always been.

I hope this question isn't too personal for a magazine interview, but I can't help but ask—how did you and Ken meet?

We met at the University of Colorado in Boulder. Ken was a journalism major; I an English major. We were "pinned"—a fraternity thing—in a month and married a year later. One of our first dates was to "listen" to the sounds of Jupiter from a science lab Ken heard about. My father was suspicious of Ken's motives … "a good way to go to the woods" … but Ken was intent, and I knew this was a man whose intellect would take him far.

My wife and I don't always agree about topics related to skepticism. I'm wondering if you and Ken also had occasional disagreements about skeptical topics. If so, what type of advice do you have for couples who disagree on these topics from time to time?

When our children were small, I told them all about fairies and leprechauns. Ken discussed stars and astronomical happenings. We made it clear that one was made up; one wasn't … but we always encouraged their own curiosity. Ken was so wonderfully respectful of others' beliefs that he was always gentle, especially after us both hearing Randi say, "People who accept pseudoscience usually need it, so be kind." Once at a dinner party where we were the main guests, a woman sniffed at Ken, "Well, what *do* you believe in?" He looked at me and said: "Love."

And while I'm on the topic of advice, do you have any advice when it comes to editing SI?

Stay wildly curious. Ken saw the night sky—every single night here in New Mexico. Let nature nourish you! Edit, like Ken did, to ensure the writer's voice is heard, loudly, not yours.

Be positive. Don't get discouraged. Ken was the supreme optimist, even though he knew a lot of the facts! Here is his last paragraph of his last book:

> We have the capacity to create the kind of world we want. I envision one in which the ideals of democracy resound to the benefit of all. Where learning, knowledge, and scientific discovery are supported and cherished. Where pseudoscience and misinformation, in all their forms, are quickly identified and countered. Where the impulses of antiscience gain no traction. Where, when the world is improving (as the data show), we can appreciate that fact; and where in those times and places where it is not, we can do what's needed to make it better.

As editor of SI, you indeed can make the world a better place. Ken did.

Have a thick skin about the letters to the editor. Frame the nice ones! One of Ken's favorites came from a person incarcerated in a federal prison. The young man wrote a complimentary letter on some article, and Ken told him he would publish it. The young man then asked if Ken would send a copy of the magazine to his parents, who had never seen their son's name on something good. Ken, of course, did it. ■

Stephen Hupp is editor of Skeptical Inquirer.

Uri Geller Admits to Being Unethical (and Skeptics Agree)

CLAUS LARSEN

An evening with Uri Geller is an evening well spent. Not because this self-proclaimed "mystifier" and supposed possessor of paranormal powers will provide any mysteries or evidence of paranormal powers, but because it is a demonstration of just how far blind ambition for fame and fortune can get you—especially if you are loose in the ethics department.

Fifty years after Uri Geller's disastrous appearance on *The Tonight Show*, about 400 people—including me—braved the darkness of the Danish winter to watch him perform in a less-than-half-full Glass Hall at the Tivoli Gardens in central Copenhagen. The audience consisted mostly of people old enough to remember when he got his breakthrough in the early 1970s, though younger faces were also to be found.

From the very start, it became excruciatingly clear what the performance was all about: It wasn't Geller's usual embarrassingly amateurish selection of tricks, served with what seemed like a rather scatterbrained approach; instead it was a carefully constructed misdirection to keep our attention away from the real action. The goal appeared to be to demonstrate that Uri Geller loves Uri Geller. A lot. Rarely have I heard so much name-dropping of actors, musicians, celebrities, scientists, and politicians, all of whom, we were told, were gushingly impressed with him and his abilities. Gleefully, he pointed out that the CIA itself had agreed that he had demonstrated his powers. He even claimed that despite the devastating criticism he has received, particularly from skeptics, he is very grateful for the publicity their criticisms has brought him. Uri Geller absolutely loves skeptics!

The latter turned out to be less than true. While Geller hammered home the notion that it was crucial for success to have "positive thinking" and "an attitude of gratitude," he does not take even the slightest criticism well. If he is not surrounded by unconditional, unquestioned adoration, his façade vanishes in a split-second, and he turns into a moping child. The shield of positive thinking is nothing but a thin veneer for the master himself. What does that say about the efficacy of the power of positive thinking?

After an hour's worth of self-aggrandizing sermons peppered with inane magical tricks, the time had come for questions from the audience. Geller's bubbly attitude became apprehensive and guarded. He assured us that we could ask him anything and he would not run away. That, also, turned out to be less than true.

When it was my turn, I asked him about his 2019 attempt to stop Brexit. Prime Minister Theresa May, being a *remainer* herself, was nevertheless determined to respect the result of the referendum and negotiate how Britain should leave the Union. Brexit continues to be an open sore in domestic politics in Britain, where *remainers* and *leavers* still battle whether it was a good or bad thing.

Enter Uri Geller. On *This Morning*, a British daytime television show, he declared his intention to make May stop Brexit. When prompted by one of the hosts, he admitted that "maybe it's loosely unethical" but justified because he considered the referendum a farce and cared about Britain.

My question was: "Why do you—of all people—get to overrule a referendum? I mean, you have no democratic mandate. Isn't that abuse of your paranormal powers?"

His response came with no hesitation:

> Because I'm a genius. I know what makes people interested in interesting stories. Last year, I think I was thirteen times, maybe less, maybe more, on the cover of British newspapers. Because I know what people love reading. I have no press people. I have no managers. I have no agents. I have no image makers. *Zero*! I do everything, Theresa May, Brexit, let me come up with a great story. But I believe in my stories. I believe them. So, a lot of the stories you read about me are a combination of publicity and my belief system wanting to achieve that.

When I tried to intervene, he continued: "Okay, there you go, you are all from the skeptics, bless you, I'll send you tomorrow a bouquet of flowers."

There we have it: To Geller, the story about his powers seems more important than whether he has powers or not. It is all about getting Uri Geller in the press, and he will tell any story about himself to achieve it. He does not consider this an abuse of his paranormal powers.

And therein lies the rub.

This is someone who claims to possess real, scientifically verified paranormal powers—not merely to bend cutlery and start and stop clocks but to predict future events, spy for the intelligence community, and control the minds of leaders of state (and even to cause May to become prime minister in the first place).

While Geller has yet to convince the scientific and skeptical communities that he has these powers, he clearly has a lot of people believing that he does. He

may overstate how many, but he has not become a rich man because only a few people believe in him. If some people believe that he can bend spoons (which, by the way, he must have access to beforehand), they may also be inclined to believe that he can control the minds of others.

The attempt at thwarting Brexit is not the only time Uri Geller has tried to meddle with high politics. In 2022, he declared that he would use his "mind power" to prevent Russian President Vladimir Putin from launching nuclear missiles against Britain.

Now, I suspect most readers of this article will not be convinced that Geller has these powers. But there is nevertheless reason to be concerned when we examine the various possibilities:

1) Uri Geller really does have paranormal powers.

As skeptics, we must be open to this possibility. But in that case, he puts himself above democracy to push through whatever decision he thinks is the right one. If Geller can *make* (his word) the prime minister of Great Britain set aside the will of the people as expressed in a referendum in a democratic nation, why bother with democracy at all? If he can stop nuclear destruction, why bother with a national defense? If he can destroy at will any nuclear weapon launched against Britain, it also means he can spot incoming missiles and choose to do nothing. Everything is within his power while the rest of us are helpless to stop him. That is a direct threat to democracies and national security.

2) Uri Geller does not have paranormal powers but believes that he does.

This is much more likely, given his behavior and argumentation. But in that case, we are dealing with an individual with dangerous beliefs who has convinced a lot (at least according to him) of people, some in high office, that he has powers that cannot be stopped. If enough people become convinced of a falsehood about how governments and nations are run, the risk of riots and insurgence is real, as the events on January 6, 2021, in Washington, D.C., showed us all.

Geller doing a spoon-bending trick in a mall in Switzerland, 2005. Image credit: Aquarius2000 - Wikipedia

3) Uri Geller does not have paranormal powers, and he knows he doesn't.

This is most likely the case, as Geller has repeatedly been caught using simple magic tricks, a fact that he is well aware of. But in that case, he is building his reputation and business on deliberately undermining trust in democracy among those voters who believe that he has the powers. Because Geller wants to be famous and knows what to say to make that happen, this is gross manipulation of his believers.

In either case, Geller clearly sees himself as above everyone else. He admits to being unethical and appears to have a blatant disregard for the consequences of his claims. He acts as if he can be the autocratic king of all humanity if he so chooses. Given his arrogance toward his critics, this poses a real threat should he manage to get enough people on his side.

The believers will no doubt disregard these concerns due to their conviction that Uri Geller is the "real thing." Skeptics know that it is an arduous task to convince believers with evidence. But if evidence does not convince, perhaps a few well-considered questions about ethics will make at least some believers think, if only a little.

Such a question would in this case be: If you believe that Uri Geller has paranormal powers, do you consider it ethical that he tries to make the British prime minister set aside the result of the Brexit referendum merely because he himself disagrees with it? ■

Claus Larsen is a Danish author, lecturer, educator, and investigator of all things skeptical.

Should Scientists Debate the Undebatable?

PAUL OFFIT

On June 20, 2023, Robert F. Kennedy Jr. appeared on *The Joe Rogan Experience*, the most popular podcast in the world. Joe Rogan was a comedian, actor, host of the television program *Fear Factor*, and color commentator for the Ultimate Fighting Championship. Kennedy is a lawyer. What better pair to educate the public about vaccines, science, and medicine?

The program was packed with dangerous and misleading information. For example: Kennedy said, "None of these vaccines are ever subjected to true placebo-controlled trials."

Most vaccines are tested in placebo-controlled trials before licensure. Perhaps the largest and most famous was that of Jonas Salk's polio vaccine, where 420,000 first and second graders in the United States were inoculated with the vaccine and 200,000 were inoculated with a salt-water placebo. Sixteen children died from polio during that study—all in the placebo group. There are no risk-free choices.

Kennedy said that thimerosal, an ethylmercury-containing preservative in vaccines, was "horrendously toxic."

Western Europe removed thimerosal from childhood vaccines in the early 1990s, and the United States did in 2001. Thirteen studies have now shown that thimerosal wasn't harmful (Children's Hospital of Philadelphia 2020). Given that ethylmercury is excreted from the body far faster than methylmercury, which can be harmful, these results weren't surprising.

Kennedy said, "You get [hepatitis B] from sharing needles, going to a really seasoned prostitute, or from compulsive homosexual behavior. … A baby gets it from their mom." Before the hepatitis B vaccine was recommended for babies in the early 1990s, the virus infected about 18,000 children every year

Dan Wilson, from the *Debunk the Funk* podcast. Credit: YouTube

(Armstrong et al. 2001). Half of those children acquired the virus from their mother. The other half from nonsexual contact with someone who was silently infected with the virus. The hepatitis B vaccine has virtually eliminated hepatitis B infections in children.

Kennedy claimed that "vaccines cause autism." At least eighteen studies have now shown that children who are highly vaccinated are not more likely to develop autism than those who aren't (Children's Hospital of Philadelphia 2018).

Kennedy said that the 1918 "Spanish flu pandemic was caused by the vaccine." Influenza vaccines weren't invented until the late 1940s.

Kennedy said, "I think Wi-Fi radiation … does all kinds of bad things including causing cancer. … There are cell phone tumors always on the ear that you use the cell phone. … I never put my cell phone by my head." Ionizing radiation, such as X-rays, can damage DNA and cause cancer, which is why X-ray technicians wear lead shields. Wi-Fi and cell phones emit *radio waves*, which are not ionizing and, therefore, don't cause cancer (U.S. Food and Drug Administration n.d.).

Rogan has said that since no one has stepped up to debate Kennedy (or sued him for his false claims), he must therefore be right. Should scientists debate Kennedy?

Scientific debates occur all the time. For example, Andrew Wakefield published a now-retracted paper claiming that the measles-mumps-rubella

(MMR) vaccine caused autism. Since that publication, dozens of studies have shown that those who received MMR weren't at greater risk of autism than those who hadn't. The MMR-causes-autism debate was waged where it should have been waged—in medical and scientific journals. In the end, it didn't matter what Wakefield said or what the scientists who exonerated the MMR vaccine said. Only the data mattered—robust, reproducible, consistent data done by hundreds of researchers on three continents. In a better world, the data would do the talking.

However, we don't live in that world. Because most people don't read scientific studies, I recommend the takedown of Kennedy by a scientist named Dan Wilson, who runs a podcast called *Debunk the Funk with Dr. Wilson*. Wilson gave Kennedy his debate by showing clips from Rogan's podcast then systematically presenting scientific evidence that refuted the false and misleading claims (Wilson 2023). Wilson didn't give Kennedy the cabaret act he wanted, but listeners got the information they needed.

Because he doesn't have solid data to support his claims, Kennedy routinely attacks scientists, pharmaceutical companies, and government officials. As noted by Carl Sandburg, "If the facts are against you, argue the law. If the law is against you, argue the facts. If the facts and the law are against you, pound the table and yell like hell." Because Kennedy is now a candidate for president of the United States, the yelling and the pounding will likely only get louder and more strident—much to the detriment of the American public. ■

Notes

See New and Notable Books in this issue for information about Peter J. Hotez's book *The Deadly Rise of Antiscience*. This article is adapted from Paul Offit's Substack from June 22, 2023, available at https://pauloffit.substack.com/p/should-scientists-debate-the-undebatable.

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[POSTCARDS FROM REALITY

ROBYN E. BLUMNER

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Transgender Women in Women's Sports: What's Fair?

Women's sports is having a moment. World Cup women's soccer this year had a purse of $110 million—quadruple the size of the prize money from the most recent previous tournament in 2019. Nielsen reports that viewership for women's sports is growing at a "meteoric pace," citing a 103 percent increase in viewers for the 2023 NCAA final basketball game, which drew an audience of nearly 10 million, among other encouraging statistics (Nielsen 2023).

Fifty years after the passage of Title IX, which barred sex discrimination in sports, women now make up 44 percent of college athletes according to the NCAA. For generations, women have been working toward this level of participation relative to men. It's something to celebrate.

But an issue has arisen that requires us to look more carefully at something we took for granted: Is it truly necessary to segregate sports by sex? The issue arises because transgender women athletes who have undergone male puberty are seeking to compete with natal women athletes. In the name of transgender rights should this be permitted, or does it inherently undermine the fair playing field that sports demand?

The question is a legitimate one, and people who ask it shouldn't be maligned as transphobes and bigots. We need to lower the temperature on these discussions. There are competing interests at stake. For transgender women, it's a way to be treated as women—full stop. For natal women, it's a question of fairness. There are incontrovertible biological differences between biological males and females that puts the question of transgender women in sports into the realm of science in addition to public policy.

What we know about the science is that males have a physiological advantage over females in competitions that include speed and strength. Humans are a sexually dimorphic species; it is largely for that reason we segregate sports by sex. Approximately 10,000 male runners have clocked faster times than the current female Olympic champion in the 100-meter race. Tennis star Serena Williams admitted when she was at the top of her game that she couldn't beat any man in the top 100 of the men's tennis circuit.

If we eliminated sex categories for most sports, there would rarely be female winners. For natal women to be able to compete in a way that gives them a fair chance at victories, there have to be sex segregated sports.

The question then becomes whether that advantage can be mitigated through testosterone suppression. That is a matter of scientific inquiry, and the longitudinal biomedical findings to date suggest that "the effects of testosterone suppression in male adulthood

have very little impact" on physiological outcomes such as muscle strength, muscle mass, or lean body mass, according to a paper titled "When Ideology Trumps Science" by six international leading researchers (Devine et al. 2022). They cite a cross-sectional study from 2022 that measured the performance of transgender women and found the "advantage may be maintained after 14 years of testosterone suppression." (For a thorough vetting of the subject, read "Transgender Women in the Female Category of Sport: Perspectives on Testosterone Suppression and Performance Advantage" by researchers Emma Hilton and Tommy Lundberg, published in the journal *Sports Medicine* [Hilton and Lundberg 2021].)

Certainly that does not mean that every transgender woman athlete will win against all natal women, just as many natal male athletes would lose against better women athletes. In Serena Williams's case, all but perhaps the top 100 men tennis players would lose in a match with her. It's just that the innate advantages conferred by male puberty are not significantly dissipated through hormone adjustments. So the initial reason we sex segregate sports remains valid: to ensure a fair opportunity for women to compete and potentially win championships.

Another argument for granting transgender women the opportunity to compete with natal women is the notion that the number of transgender women athletes is so small that granting them this consideration would not significantly impact women's sports. But that would create a situation where transgender women athletes would be free to compete against natal women unless and until their numbers grow and/or they started winning. How fair is that, especially to the transgender women athletes already in the pipeline?

We've already seen this happen in women's cycling. Reportedly there are now dozens of transgender women competing in women's cycling, and they are starting to take top honors and cash prizes—including American transgender woman cyclist Austin Killips, who won a women's stage race at the Tour of Gila.

So, what happened?

Soon thereafter, the Union Cycliste Internationale (UCI), the governing body of cycling, decided in July to ban transgender women who had gone through male puberty from women's competition. They can compete in a "men/other" category instead. This follows on the heels of a decision in May by British Cycling that banned transgender women from women's competitive events.

Previously, the rules for international cycling had included limits on testosterone levels. But that didn't suffice to make the playing field level. In fact, some top women cyclists, such as Hannah Arensmen, a thirty-five-time winner on the national cyclocross circuit, announced they were quitting the sport due to this unfairness. Arensmen was repeatedly beaten by transgender women cyclists, including one nearly double her twenty-four years, and she had had enough.

The international governing body for swimming, World Aquatics, announced in July that it would establish an "open" category that would be open to all transgender athletes, thereby giving natal women their own category for competition.

These rule changes are a nod to reality and a recognition that rules for sports need to be clear and universal so aspiring athletes can decide whether they want to invest in training. Top athletes, even those at the collegiate level, spend a huge amount of time working toward peak performance. They need to know ahead of time about their field of competition, to know if they will be truly competitive. That is why all sports where male physicality is an innate advantage need to unambiguously grant natal women athletes their own category. Otherwise, at some point, women are not going to bother.

I am sympathetic to the argument that transgender women are socially disadvantaged and stigmatized. And the way to combat it is to integrate them into womanhood without differentiating between natal women and transgender women. But I wonder if that's truly the case and if forcing open women's sports to transgender women hasn't exacerbated the problem.

A recent Gallup poll shows that a larger majority of Americans now say transgender athletes should only compete on teams that match their assignment at birth than in prior years. Sixty-nine percent now oppose transgender women in women's sports compared with 62 percent who objected in 2021. And only 26 percent of people endorse the idea of transgender athletes playing on teams that match their gender identity. That's down from 34 percent in 2021. The appearance of transgender women athletes competing—and at times winning—in female sports categories is not ameliorating the social stigma. If anything, it is driving people away from sympathies with transgender rights.

Christian nationalists and some Republican lawmakers are whipping up a backlash against the transgender rights movement to solidify and energize their base. On the other side, the identitarian Left is demonizing anyone who doesn't go along with every element of the transgender rights agenda, including transgender women in women's sports.

Sophisticated people who care about both science and social fairness need to separate the signal from the noise. These are complicated issues that need to be parsed to do the least harm possible to the most people. In that calculation, I stand with the natal women athletes who want to compete against each other. ■

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Joe Nickell, PhD, is the author of numerous books, including *Entities* (1995) and *Tracking the Man-Beasts* (2011).

Revealing the Real Carolina Lizard Man

As part of my career as "The Detective of the Impossible," I have investigated the world's "cryptids" (hidden creatures) for well over half a century. I have sought their purported lairs from A to Z—literally from the Adirondack Mountains to remote Zhoukoudian, China. My successes began with an intriguing "devil baby mummy" I encountered in a Toronto curio shop in 1971 and include the "alien" Flatwoods Monster case that had remained from yesteryear but that I solved effectively decades later (Nickell 2011, 148, 159–166). More recently, I identified the very real creature behind the cryptically reported "Dover Demon" of 1977 (Nickell 2023).

Here, I respond to a case from 1988, encountered by a definitive witness (who died in 2009). Despite his apparent misperceptions and erroneous memories, the event nevertheless rings true. Indeed, I am familiar with such a creature that I myself have experienced in the wild; I am convinced it is the selfsame one—now no longer a *cryptid* but an actual resident of swamps and woodlands (Nickell 2011, 177, 179, 180, 215).

By Any Other Name

The story begins in the early-morning hours of June 29, 1988.[1] As teenager Chris Davis drove home from his night-shift job, he experienced a flat tire near Bishopville, a small South Carolina town. As he finished replacing the tire, he heard a noise that drew his attention across a butterbean field of the Scape Ore Swamp. He saw a bipedal figure that had come out of some trees into the light of the almost-full moon. He guessed it was over seven feet tall, assuming it was at a distance of some twenty-five yards, but he gave different estimates in subsequent accounts.

In my experience, the height of unknown creatures is frequently exaggerated by witnesses. For example, something frightening—as in this case—may loom large in one's consciousness (Nickell 2011, 179). Also, distortions of various kinds may occur, especially in cases like that of the Dover Demon (Nickell 2023) in which a witness admits to having smoked marijuana. Moreover, people's memories tend to evolve over time.

In any event, young Davis's attention was caught by the creature's "red eyes glowing." He focused on these as the cryptid rushed toward him. He then ran to the car and locked himself inside. At this point, he could only see the creature "from the neck down" but observed that it had "three big fingers, long black nails and green rough skin" (quoted in Manley 2007).[2] At first he stated the creature had "scales" but later changed that to being "caked with mud" (Bingham and Riccio 1991, 171–174). These descriptors are fairly accurate for the real creature I have identified, as we shall soon see.

Davis continued: "I looked in my mirror and saw a blur of green running. I could see his eyes and then he jumped on the roof of my car. I thought I heard a grunt and then I could see his fingers through the rear windshield, where they curled around on the roof. I sped up and swerved to shake the creature off" (quoted in Manley 2007).

Rushing home, he and his father inspected the vehicle for damage, discovering that the side mirror was twisted and there were deep scratches on the roof.

The report of the vehicle damage has been questioned, seemingly at best exaggerated. Moreover (as Radford [2023, 61] speculates), because Davis "was swerving back and forth through a swampy, wooded area" trying to escape the creature, "it's possible that he scraped low-hanging tree branches." As to the monster's reputed ability to traverse distances with great speed, it is here that we should pause to consider its identity.

Identification

What Chris Davis saw was indeed a creature of the night: a large, stocky, "earless" member of the family Tytonidae—namely, *Strix varia*, the barred owl. It gets its name from bars (dashes) and other markings on its plumage—i.e., is "heavily streaked, spotted, and variegated brown, buff, and white" (Alsop 2001, 378; Rogers 2008, 162–165). Sometimes they can look like scales or mud caked as Davis indeed stated (Bingham and Riccio 1991, 172).

This owl would be right at home where it was seen because it inhabits "swampy forests." There, in its "dark retreat, usually a thick grove of trees," it rests during the day, coming out in the night to feed (Bull and Ferrand 1994, 551). Of course, its eyes do not "glow," but it indeed has crimson *eyeshine*, as Davis saw, and is, in fact, the same creature I identified as the culprit in the 1996 flap in West Virginia that gave "Mothman" its original name (Nickell 2011, 175–181)! Among the barred owl's folk names are Crazy Owl, Round-Headed Owl, Swamp Owl, and many others (Rogers 2008, 84).

Obviously young Davis did not see in the dark that the creature could fly, perceiving only a blur of its wings. He would also see it with its wings down, and—as with the Dover Demon (Nickell 2023)—mistakenly interpret the wings' front edges as long, spindly arms. At the ends of such (shown in

Davis's sketch) were its "three big fingers"—actually splayed feathers common to birds at their wingtips. (The portion of a wing that corresponds to the human hand is termed the *manus* [Latin for *hand*]. See Alsop 2001, 731; Rogers 2008, 32.) This same effect of "arms" and "fingers" has been reported in the cases of other owl monsters: both the Dover Demon (Nickell 2023) and the Kelly, Kentucky, creatures of 1955 (Nickell 2011, 171). (It underscores my longtime urging that investigators study illusions by becoming magicians.)

Indeed, as to the "blur of green running," this seems to have occurred early, therefore witnessed before Davis got back in the car, or he saw it out a side window. In other words, it was possible from the flapping of wings as the barred owl began flight, disturbing *green vegetation*. Most interestingly, barred owls are "Territorial all year round, and chase away intruders." In fact, humans may provoke one to "flee, perform a noisy distraction display with quivering wings, or even attack" ("Barred Owls" 2023).[3] We may well suspect that such an attack was what Davis experienced!

In any event, it appears that the sight was a perception in a told-and-retold narrative. The local sheriff, Liston Truesdale, was impressed that Davis intended to relate a true story, and—for what it is worth—he passed a polygraph test without trouble (Radford 2023, 59; Blackburn 2013, 33).

Denouement

As with so many hapless persons who encounter "monsters," the percipient in this case was caught by surprise, frightened, challenged to see something that was difficult to see, confused later as to the sequence of details, grilled by debunkers, half-listened to by sarcastic reporters, and exploited by others hoping for profit.

In my long, if unusual, career, I have come across "monster" witnesses accused of being hoaxers—just like Chris Davis. He is gone now, murdered June 17, 2009, at age thirty-nine, over a marijuana deal gone bad. In the book *Lizard Man: The True Story of the Bishopville Monster,* Lyle Blackburn (2013) has told us more, perhaps, than we wanted to know about Davis and his encounter. There are accounts by many others, plus earlier sightings, hoaxes, speculations about "underground reptoids," shape-shifting "reptilians" (some with long tails), a frog-like cryptid, "gatorman," the Skunk Ape and other versions of Bigfoot (or what I have renamed "the Bigfoot Bear"—one seen in its upright mode), and so on, Lizard Man festivals, souvenirs, and much, much more, including the "Curse of Lizard Man," and "Lizardmania"—*ad nauseum* (45, 89–123, 143, 156–157).

Just about the only thing missing is a barred owl! Indeed, Blackburn mentions other swamps where (unknown to him, apparently) barred owls exist. One is the Honey Island Swamp in Louisiana (Blackburn 2013, 107, 154). At that wilderness area I searched for its fabled (originally hoaxed) swamp monster in 2000. My Cajun guide, Robbie Charbonnet, had never seen a monster there, but from merely glimpsing a silhouette, he identified for me a barred owl, then carefully steered his boat through cypresses hung with Spanish moss so I could have a closer view (Nickell 2011, 214–215). I don't know if anyone ever came in the night and saw its "glowing" red eyes, but I once encountered one in the wild that I can see still. Unlike Chris Davis, I knew what it was.

Let us review the elements in Davis's experience that identify the monster he saw as a barred owl: The creature was nocturnal; it inhabited a swampy woodland and exhibited crimson eyeshine; it had scales or seemed caked with mud; it appeared as "a blur of green" (likely a "quivering wings" display in moonlit greenery, presaging an attack); it seemed to have "arms" (front wing edges) with long "fingers" (splayed-feather wingtips), as well as rough-skinned legs, each possessing three toes with "nails" (an excellent description of a barred owl's tarsus—lower, featherless part of the legs—and talons); and the creature was territorial, making an attack on a human intruder. Hopefully, someday if you encounter such a creature yourself in the wild, you won't believe it's a Lizard Man! You'll recognize a barred owl. ■

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The November 2015 issue of the *Fortean Times* featured the Carolina Lizard Man on the cover.

Notes

1. The sighting was not "late at night" on June 28, 1988, apparently, as often reported, but "in the early morning hours of June 29" at "around 2:30 a.m.," according to Blackburn (2013, 9, 165).

2. Here, the reference is probably not to the large "fingers" (at wingtips) but instead to the owl's very powerful talons. One writer tells how a barred owl once put a claw through his hand (Rogers 2008, 162).

3. Could a "quivering wings" display in the moonlit greenery have been the source of the "blur of green"?

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[THE PHILOSOPHER'S CORNER MASSIMO PIGLIUCCI

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Is There a Problem with Skepticism?

One of my best friends is a skeptic. And yet for years he has been trying to convince me not to use the S-word. You see, every time he talks to someone about the activities of our local group, New York City Skeptics, tries to promote the Skeptical Inquirer, or our former podcast *Rationally Speaking*, he runs into the same problem: people are immediately turned off by a term they interpret as characterizing a persistent doubter, someone who scoffs at every new notion, a pessimist, or a prophet of doom. And who wants to be *that*?

Of course, we know better. Readers of this magazine likely are aware that the word *skeptic* comes from the ancient Greek *skeptikos*, meaning "inquiring, reflective." (Let's skip over the etymologically annoying fact that Skeptical Inquirer literally and rather redundantly means "Enquirer Enquirer.") Skeptics, therefore, ideally are curious and open-minded people who assess beliefs based on arguments and evidence, who inquire into things, and who are willing to change their positions if the facts on the ground demand it. Who *wouldn't* want to be that?

I was reminded of this contrast between what I shall refer henceforth as *skepticism* (lowercase-s, the common attitude) and *Skepticism* (capital-S, the inquiry approach) when reading an otherwise splendid and highly recommended essay by philosopher Daniel Williams in the *Boston Review* (Williams 2023). Williams takes on the most recent salvo in the anti-fake news literature, psychologist Sander van der Linden's book *Foolproof: Why Misinformation Infects Our Minds and How to Build Immunity* (van der Linden 2023).

Van der Linden's contention is that misinformation acts like a virus of the mind, metaphorically infecting susceptible people and causing social mayhem. The way to counter this, as the viral metaphor suggests, is to inoculate people. This can be done in two ways: first, by analogy with biological viruses, the inoculation can work like classical vaccines: exposing people to a harmless version of the pathogen thus triggers their own immune response. Or, second, by analogy with the sort of more advanced vaccines we used against COVID-19, we may be able to expose people to the "DNA," that is, the basic constituent blocks shared by all types of misinformation, thus generating an even stronger immune response.

How would this work? Van der Linden and colleagues have actually carried out pertinent experiments. For instance, they had people play a game in which they were exposed to harmless examples of misinformation. The subjects had little difficulty recognizing the fake news from the legitimate news and were allegedly ready to apply their newly acquired immunity to real-life situations.

Better yet, van der Linden thinks we can expose people to what he maintains are the six building blocks of misinformation, namely: discrediting, emotion,

polarization, impersonation, conspiracy, and trolling (DEPICT, in acronym) to obtain a wide spectrum immunity from nonsense.

This may be too good to be true, however. I will not go into the particulars here, but Williams details why van der Linden's experiments are actually problematic and do not necessarily do what the author claims they do. For example, in one experiment the psychologists provided subjects with a couple examples of real reliable news as well as several instances of fake news they had made up (Roozenbeek and van der Linden 2019). Williams points out, however, that there are two methodological issues that confound the results: On one hand, the genuine news items were so well known that at least some of the subjects may have simply been aware of them before the experiment—not because their critical sense was at play. On the other hand, the made up fake news were so simplified that they didn't really present much of a challenge compared to what's out there.

Williams goes on to explain why there simply is no such thing as the building blocks of misinformation, because all six alleged components are also part of perfectly sound cases of reliable information. Take, for example, the first block: discrediting. Van der Linden's idea is that conspiracy theorists regularly engage in discrediting their opponents. True. But so do both skeptics and the mainstream media! What else would you call it when we point out that so-and-so is a *charlatan*, when we use words such as *quack*, or when we talk about *debunking*? Discrediting one's opponent is a standard rhetorical strategy and can and is used both for good and for ill.

Or take the third "block": polarization. Van der Linden claims that a hallmark of fake news and conspiracy theories is that they position themselves at the extreme of the political spectrum, attempting to pull people away from the more reasonable center. But it's historically very easy to prove that sometimes the center is unreasonable and one of the extremes is not. We would not have achieved the abolition of slavery and women's suffrage, just to mention a couple of instances, if we had rejected any and all positions that were not centrist when they were proposed. The same, Williams explains, goes for all other components of van der Linden's "DNA." As I said, the essay is well worth the read.

The bit where I paused and did a double take is where Williams says that the problem—far from being widespread gullibility among the general public—is that there is *too much skepticism*. He says, "In general, people are highly skeptical of information they encounter." Wait, what?

It took me a little bit to realize that Williams, who is no fool, is talking about *skepticism*, not *Skepticism*. This is especially clear when he makes the following remarks:

> Inoculation theory rests on a flawed portrait of human beings as passive and credulous. Far from being gullible victims of mind viruses that plague our information ecosystems, we are sophisticated agents with complex goals and identities navigating environments dominated by largely reliable information, at least on simple factual matters. To the extent that people are misinformed on these matters, it is often not because they have been duped by encounters with unreliable sources; it is because they are overly skeptical of reliable sources that contradict their preexisting beliefs, or because the consumption and propagation of misinformation promotes their interests or goals.

And that is, I think, exactly right. A major reason people buy into conspiracy theories and all sorts of other bunk is either because it reinforces their preexisting worldview and therefore makes them psychologically more confident or because they distrust mainstream media and authorities (including scientists and other experts)—or both. Seen this way, there is no contradiction between saying that the problem is too much skepticism and not enough Skepticism—too much scoffing and uncalled for doubting, as well as too little genuine inquiring.

What, then, are the solutions to the problem? The very same that have been proposed for a long time, I'm afraid. When the problem is "skepticism" of mainstream media and institutions, these institutions must work to rebuild public confidence, which is why it matters very much what journalists, policymakers, and scientists say to the public. (See my previous column on the importance of trust.)

Similarly, when the problem is the preexisting worldview and self-identity that some people have built over time, which conflicts with what science and reason tell us is or is not the case, we need education—in the broadest possible sense of the term and starting as early as feasible in people's lives—so that we engage in what Williams calls *pre*bunking rather than *de*bunking. It is a basic fact of developmental cognitive psychology that people's minds form in the period that brackets the onset of the age of reason (about seven years old) to late teenage years (or, at most, early twenties). *That* is the window where we should focus most of our energies and resources. After the window has closed, it takes a lot of work to open a crack in people's identities and worldviews, and it is often simply not possible—especially if we engage in a frontal assault on those identities and worldviews.

The irony here is that theories such as van der Linden's have gone, ahem, viral in certain quarters precisely because they reflect some people's (including scientists) preconceived view about fake news and those who consume it. Williams ends his critical analysis with these words:

> The belief that a dangerous misinformation virus is a major source of society's problems is popular not because it is supported by evidence, and not because it has duped credulous individuals, but, most plausibly, because its apolitical, technocratic, and simplistic character resonates with the interests and biases of those who consume and propagate it. ■

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Response to Massimo Pigliucci's Column

SANDER VAN DER LINDEN

In his column in this issue, Prof. Massimo Pigliucci rehashes Dan William's review of my book *Foolproof*. I'm grateful for the opportunity to respond and point out major errors in both Pigliucci's column and the review it references.

I should note that two excellent philosophers—Andy Norman at Carnegie Mellon University and Lee McIntyre at Boston University—have already published a counter-review dissecting the logical fallacies and philosophical flaws in the Williams review, which I highly recommend to readers (Norman and McIntyre 2023).

I'll start with the empirical evidence. Both Williams and Pigliucci cherry-pick concerns about one study but fail to discuss dozens of other empirical studies I review in the book that use different items, research designs, and samples. But even the concerns raised about Roozenbeek and van der Linden (2019) are specious (i.e., that we selected easy test items). For example, an independent replication was conducted by a team in India using very different, local headlines. The results replicated nearly exactly (Iyengar et al. 2023). What about meta-analyses of the literature that have found strong evidence that inoculation is effective (Banas and Rains 2010; Lu et al. 2023)? Or our research with Google, which has scaled inoculation videos across millions of users in the real world, finding highly consistent evidence of people's ability to discern manipulative from nonmanipulative content across many experiments (Roozenbeek et al. 2022). All this evidence is ignored.

Another critique of our framework is that manipulative tactics are not unique to misinformation. Again, the empirical evidence is ignored, as research clearly shows that misinformation has discernible fingerprints (Carrasco-Farré 2022). On a philosophical level, the critique doesn't hold water either. Of course, fact-checkers use discrediting, some conspiracies are real, and social movements can appeal to people's emotions. But the way in which these techniques are used by bad actors is entirely different. Fact-checkers discredit using science, facts, and evidence. Manipulators discredit using deflection, denial, and sowing doubt. Real conspiracy theories are uncovered by healthy skepticism (e.g., investigative journalism), not via paranoid conspiracy cognition (see Maarten Boudry's 2021 work). Communicating an empathetic story is very different from fearmongering to dupe people. The key point is that it doesn't matter who uses the technique; an argument or headline will be of lower epistemic quality if a point is being made by using polarization, conspiratorial reasoning, or emotional manipulation than if the same point is made without invoking such tactics. That's what real *Skepticism* is about: raising your eyebrow at anyone who uses logical fallacies or manipulative techniques (see Pigliucci's column for the distinction between *Skepticism* and *skepticism*).

Lastly, Pigliucci praises Williams for the idea of *pre*bunking. However, a Skeptic might notice that prebunking isn't Dan William's idea (or area of expertise) at all. It's *mine*. Pigliucci calls for integrating prebunking into early education before people's worldviews become too fixed. This is literally what I advocate for in the book, which I feel Pigliucci hasn't given a fair shake. Given his science background, Pigliucci might appreciate that the viral analogy that runs throughout the book draws on epidemiological models, which are not only used to study viruses but also how misinformation spreads on social media.

This is not alarmist; it's empirical science.

We shouldn't be attacking evidence-based efforts to combat misinformation, which is a threat that should unite rather than divide Skeptics in our common fight against pseudoscience and disinformation. In his article, Pigliucci defines Skeptics as open-minded people who are willing to change their minds if the facts demand it. I hope he practices what he preaches. ■

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Massimo Pigliucci responds:

I wish to thank Prof. Sander van der Linden for his spirited response to my SI column. The additional sources he references are certainly worth checking out for readers of the magazine to arrive at their own conclusion about this particular debate.

Van der Linden says that both Daniel Williams, whom I mention in my column, and I engaged in cherry-picking when articulating concerns regarding the work on whether it is possible to immunize people's minds against fake news and other kinds of misinformation. But of course, one author's cherry-picking is another author's necessarily limited number of examples to make a point. Readers will have to assess the balance.

Replications and meta-analyses are certainly important tools of scientific research, and van der Linden is right in citing examples of both in support of his conclusions. However, the issues that Williams raises, and on which I commented, are conceptual and methodological. If those issues have validity, then no amount of replication or meta-analyses will settle them, because the methodological flaws get replicated and meta-analyzed. This means we'll have to wait for both more debate and additional empirical evidence, which is what good scientists and skeptics do anyway. This is particularly true when it comes to research in psychology, which has notoriously suffered from massive methodological as well as replication problems over the past several years (Stewart-Williams 2015).

Van der Linden claims that misinformation is characterized by discernible fingerprints. Williams and I reject that notion because those same fingerprints are also easily discernible in cases of popularization of scientifically valid information. Van der Linden now acknowledges this but claims that *the way* such fingerprints manifest themselves is different in the two cases. He states that "Fact-checkers discredit using science, facts, and evidence. Manipulators discredit using deflection, denial, and sowing doubt." I agree, but I also don't doubt that the manipulators would flip those sentences around so that who's fact checking and who's manipulating isn't as easy to recognize from the point of view of the general public, which means the alleged fingerprints are *not* actually discriminatory between the two cases.

Let me add a brief comment about the whole "viruses of the mind" metaphor. I think the metaphor is misleading, like many metaphors used in science (Pigliucci and Boudry 2011). While the virus metaphor is captivating and may even superficially describe some of the dynamics of what's going on, to extend it to the point of basing alleged cures on it ("immunization") is a rather questionable way to proceed.

Finally, I'm pretty sure that the notion of *pre*bunking (instead of debunking) isn't original with either Williams or van der Linden. It goes back at the least to Plato and his idea that virtuous citizens are the result of virtuous education. ■

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[BEHAVIOR & BELIEF STUART VYSE

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Mental Illness and the Tragedy of Good Intentions

Norwich State Hospital, Norwich, Connecticut (Source: Wikimedia)

For many medical conditions, the preferred treatment is settled science. When you go in for a broken bone, you will get very similar care no matter which doctor you choose. In the world of psychiatric disorders, however, things can be quite different. Professionals often advocate wildly varying approaches and may disagree about the basic question of whether therapy is warranted at all. Even in the case of schizophrenia—among the most serious of psychiatric conditions, profoundly affecting thought and judgment—there can be disagreement about how to proceed. Although modern medications have demonstrated the power to make substantial improvements in the lives of people suffering from this and other psychotic conditions (often making the difference between independent living and more restrictive care), these drugs have side effects that make them a less-than-perfect treatment. In addition, because schizophrenia is an adult disorder, under most circumstances the patient must be willing to provide consent to whatever line of treatment is proposed, and either because they don't believe they need the drugs or they don't like the way the drugs make them feel, an estimated 40–50 percent of patients do not comply with treatment (Tsang et al. 2009).

The Hearing Voices Movement

A May 2022 *New York Times Magazine* article featured a group of people with schizophrenia who have eschewed medication, preferring to align themselves with the growing neurodiversity movement that seeks greater acceptance of people with autism (Bergner 2022). An organization called the Hearing Voices Network offers support and counseling for people with schizophrenia who make the choice to embrace their disorder. The author of the article went so far as to suggest that "the evidence that the medications improve outcomes is murky."

But this is a minority view. When the *New York Times Magazine* piece came out, writer Freddie deBoer, who suffers from bipolar disorder, took to YouTube (https://youtu.be/yKB6F_VYuZY) to record an emotional reply: "The absolute relentless insistence that I need to love my disorder, that I have to act like it's somehow a superpower or something positive in my life is very tiring." He insisted that he needed to be medicated, despite very difficult side effects, because without medication he was potentially a danger to himself and

Patients undergoing hydrotherapy for chronic alcoholism at North Dakota State Hospital at Jamestown in 1954 (Source: asylumproject.org)

others. When medicated, he was able to function and create a semblance of a normal life. What he wanted was not the absence of medication but better medications that would be effective and not produce brain fog, weight gain, and other side effects he currently endured. The articulate people interviewed in the *New York Times Magazine* article did not speak for deBoer, nor did they seem to speak for the many people we see shouting into the wind on the streets of cities throughout this country.

The Deinstitutionalization Movement

Identity-based theories of mental illness are a contemporary trend, but the history of mental health policy has often been driven by ideologies that, while offered with the best of intentions, were not driven by evidence.

The early history is familiar. For centuries before there were effective treatments for mental illnesses, people with behavioral and emotional problems were warehoused in asylums and hospitals and kept away from view. The conditions in these institutions were often deplorable, and in the middle of the twentieth century, several forces came together to make dramatic changes in the standard of care.

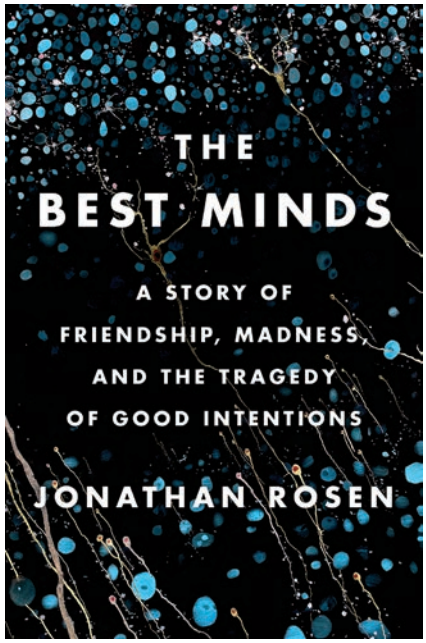
Psychotherapy is a relatively new idea introduced by Sigmund Freud and his colleagues at the end of the nineteenth century, but it was not until the middle of the twentieth century that effective treatments for severe disorders began to emerge. Prior to this, a series of sometimes bizarre and often ineffective therapies where tried. Some positive results were found with electroconvulsive therapy (ECT) and psychosurgery (e.g., lobotomy), but almost from the beginning these methods were seen as brutal and oppressive.

ECT's first depiction in American film was in Anatole Litvak's 1948 psychological drama *The Snake Pit*, starring Olivia de Havilland as a woman with paranoid delusions, and in subsequent films the presentation of ECT has gotten progressively more negative (McDonald and Walter 2001). *The Snake Pit* also featured hydrotherapy; people have believed in the therapeutic power of baths since ancient times, and in the nineteenth century this notion became popular again, with many people visiting spas where spring water or baths were said to have curative benefits. In the mid-twentieth century, many state institutions had rooms full of bath tubs where the patients lay submerged from three to eight hours per day (Harmon 2009).

However, in the 1960s, as several human rights movements were gaining strength, the treatment of patients with severe mental illness became a target of concern. In 1965, Senator Robert F. Kennedy toured the Willowbrook State School in Staten Island, New York, which housed thousands of children with intellectual disabilities, and he found them living in filthy, overcrowded spaces: "There are no civil liberties for those put in the cells of Willowbrook—living among the brutality and excrement and intestinal disease" ("Excerpts

from Statement …" 1965). In 1967, Fredrick Wiseman's film *Titicut Follies* portrayed the horrible conditions at Bridgewater State Hospital in Massachusetts. Before the film had its New York Film Festival debut, the state of Massachusetts sued Wiseman, claiming the filmmaker had violated the patient's rights, and for many years *Titicut Follies* was impossible or very difficult to find. The film eventually had its first television airing on PBS in 1992 and is now available on DVD.

These horrific cases of abuse, among many others, fueled a theory that it was the institutions themselves that were the problem. This view was further supported by American libertarian psychiatrist Thomas Szasz, who argued against what he called the "myth of mental illness," suggesting instead that people with schizophrenia and other disorders were merely experiencing "problems of living," and that involuntary institutionalization and the insanity defense should be eliminated (Szasz 1960). Similarly, the 1975 Academy Award–winning film *One Flew Over the Cuckoo's Nest* presented the view that much of the problem was the oppressive institution, personified by Nurse Ratched, and that the appropriate response was escape.



By coincidence, these anti-institutional views and an increased concern for civil liberties took hold as the first round of effective antipsychotic drugs became available, making the deinstitutionalization movement a possibility. In theory, the state institutions would be emptied out, and with the aid of appropriate medications, formerly hospitalized patients would be treated in local community mental health facilities. An additional benefit of this movement for state governments was to shift the expense of mental health care from the states to the federal government through Medicaid payments to the community mental health facilities (Eisenberg 2010). As we now know, this plan, which was mostly motivated by good intentions, did not come to pass. The promise of an effective network of community mental health facilities was unfulfilled, and many people with serious mental illness were suddenly on their own.

The New York State Psychiatric Institute was founded in 1895, one of the first institutions of its type. The Herbert Pardes Building (shown) at 1051 Riverside Drive was built in 1998. Image Credit: Beyond My Ken - Wikipedia.

A Tragedy of Good Intentions

Much of this history is recounted in a recent beautifully written memoir, *The Best Minds: A Story of Friendship, Madness, and the Tragedy of Good Intentions,* by Jonathan Rosen, which tells the story of two friends, Rosen and Michael Laudor, growing up together in New Rochelle, New York, living somewhat parallel lives and going off to Yale University together. The title of the book is a reference to Allen Ginsburg's famous 1955 poem *Howl*, which begins with the line, "I saw the best minds of my generation destroyed by madness, starving hysterical naked." *Howl* is dedicated to Carl Solomon, a friend Ginsberg made while they were both hospitalized at the New York State Psychiatric Institute. The reference to *Howl* is appropriate because soon after graduation from Yale, Laudor began to show signs of schizophrenia and threatened his parents with a knife because he claimed they had been replaced by Nazis who were posing as his parents.

By all accounts, Laudor had been the more brilliant of these two very intelligent boys. He graduated from Yale in three years and secured a job at the management consulting firm Bain and Company with the intention of first becoming rich and then launching a writing career. At many points in the story, it was Laudor's towering intelligence that inspired people to make extraordinary efforts on his behalf, but often it appeared that Laudor served as the object of fantasies dreamt up by his helpers, who hoped his life would play out as an inspirational allegory.

Laudor's time at Bain was quite brief, and it is after he had come home to New Rochelle that he experienced his first psychotic episode and consented to being hospitalized. Eventually, Laudor was admitted to Yale University Law School, but as he was suffering from schizophrenia and taking medications, it was difficult to do the work. Nonetheless, several faculty members and many of his fellow students rallied around him to help him complete his readings, write his papers, and eventually graduate. After graduation, the faculty created a research fellowship so that he could spend two additional years at Yale.

Back at Yale for law school, Laudor revealed his condition to only a very few people, but later, while (unsuccessfully) looking for employment as a law professor, he decided to go public. A profile of Laudor appeared in the *New York Times*, "A Voyage to Bedlam and Part Way Back" (Foderaro 1995), and the resulting publicity had a profound effect on his life. Soon, Scribner offered Laudor $600,000 for a book based on his life, and movie rights were also purchased. Ron Howard was to direct, and Brad Pitt would play Laudor. But confronted with a big writing project—now away from the nurturing confines of Yale University—Laudor struggled, and the eventual outcome was horribly tragic. Laudor's story was no longer one of triumphant redemption. The book would never be completed, and Howard went on to find a more uplifting story in the 2001 film *A Beautiful Mind*.

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In *The Snake Pit*, Olivia de Havilland was finally cured—not by ECT or hydrotherapy but by a kind of Freudian insight that paved the way for a happy ending. In *One Flew Over the Cuckoo's Nest,* Chief Bromden finds the inner strength to break through the walls of the hospital and get away. These plot lines sketched stories that confirmed views of mental illness that were popular at the time. The idea of people living happily without medication supported by a Hearing Voices Movement is also a happy story that fits with the present moment. But the beauty of Jonathan Rosen's *The Best Minds* is that he does not succumb to an easy interpretation—but for (fill in the blank) Michael Laudor would have gone on to a good life. There was no happy ending to the story of Michael Laudor, but Rosen illustrates how Laudor's authentic charms made it possible for many people to project a kind of vision onto him. In one sense, the Michael Laudor story is a parable about how we love parables. It is a reminder that, whether driven by a cherished ideology or merely by a private hope for evidence of a redemptive world, our view of mental illness may say more about us than it does about the people we wish to help. The Michael Laudor story is just an individual case that yields few general conclusions, but Rosen quite effectively demonstrates how our societal and individual good intentions can have tragic consequences for people with mental illness and those around them. ■

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UFO Whistleblowers Go to Washington

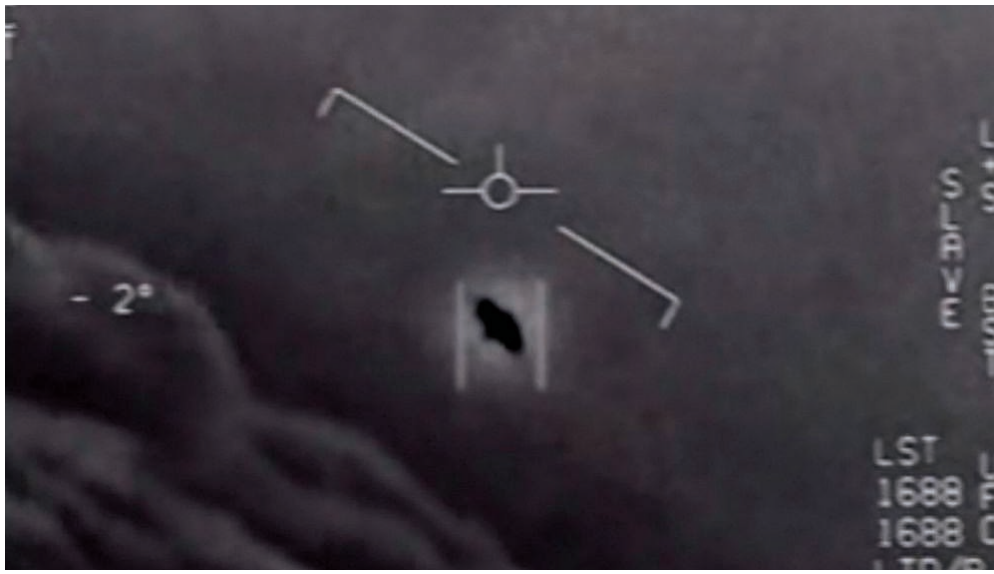
UFOlogy exists in a constant state of frustration. Its adherents *know*, sometimes based on deeply personal experiences and sometimes based on their study of the proffered evidence, that UFOs represent something beyond humanity as we know it. UFOs, they think, are alien visitors from another world, or perhaps interdimensional entities, time travelers, or even angelic beings.

Science, unfortunately, remains unconvinced. Driven by evidence and testable hypotheses, the scientific examination of UFOs (or UAP, as they have recently been rebranded) has been stymied by the annoying absence of both those things. UFO photos remain blurry. Anecdotes about giant triangular craft flying overhead or visits by grey beings never rise to the standard of scientific evidence. Scientists take a pass.

Seeking to explain this disconnect between their deep-seated personal beliefs and the extraordinary lack of scientific data to back it up, the believers in nonhuman intelligence reach for an old standby: a vast conspiracy.

According to this conspiracy, the government has been collecting and hiding all the good evidence on UFOs since the 1940s. The conspiracy theory has a rich and detailed narrative centering around the idea that UFOs occasionally crash, and the government swoops in to gather the remains—sometimes including alien bodies—and transports them to secret military facilities for further study.

We are all familiar with the key elements that make up this story, because it has become part of popular culture. Roswell was the site of one of the first alleged crashes. Area 51 is a legendary secret base rumored to contain flying saucers. Men in Black arrive to collect UFO debris and silence witnesses. Grey aliens visit ordinary people in their dreams and, occasionally, presidents in underground bases.



Alleged UFO tracked through U.S. Navy aircraft Heads Up Display.

But none of this stirs the scientist. It's all allegedly hidden away in classified programs denied by the government. The evidence of alien visitors is supposedly right there, in a few hangars, but somehow nothing verifiable has leaked out. An eighty-plus-year program has somehow been wrapped up tight in an implausibly successful wall of institutional secrecy. If UFOlogists are to get the validation they so desperately crave, they need someone to breach that wall. They need a whistleblower.

Hopes have been raised before, and various figures have come forward claiming to blow the whistle. Jesse Marcell spent many years trying to persuade people that he's seen evidence of aliens at Roswell. In the 1990s, Robert Dean, a U.S. Army Command Sergeant Major, claimed to have seen top-secret documents proving alien visitation. Bob Lazar said he was hired to work on reverse-engineering flying saucers. More recently, Eric Davis claimed the Pentagon had "off-world vehicles not made on this earth."

There were many others, but again none of them stirred scientists or even the media to take the topic seriously. The claims were outlandish and impossible to verify. The individuals often seemed unreliable. No actual evidence was presented, only stories. They needed something and someone better.

A New Hope

That someone was to be David Grusch, a former Air Force officer and intelligence official with a degree in physics and a seemingly impeccable resume. He'd worked with the Pentagon's UAP task force and had investigated secret UFO-related programs. He was going to be the one to blow the whole alien cover-up wide open.

Grusch did not spring fully formed onto the UFO scene; instead, his debut was orchestrated, staged, and carefully managed by a small group of like-minded individuals.

It seemingly started back in June 2022, when Grusch met George Knapp and Jeremy Corbell at a UFO conference. Knapp is a journalist specializing in UFOs, and Corbell is a UFO filmmaker well known for hyping "leaked" UFO videos that, invariably, turn out to be disappointing.

They met again a few months later at a *Star Trek* convention in Las Vegas. Grusch confided that he had some knowledge of a secret government program to do with alien technology. But he was also going through a legal procedure complaining about reprisals he thought he'd received for speaking out about that program.

Grusch was introduced to the inner circle of UFOlogy, specifically former Pentagon UFO investigator Luis Elizondo, biology professor Garry Nolan, and former government official Chris Mellon—all of whom were part of rock-star Tom DeLonge's "To The Stars" UFO investigation academy back in 2018.

They must have felt like they had struck gold. All of them had been involved for years, trying to build on the momentum of the 2017 *New York Times* article by Leslie Kean and Ralph Blumenthal that is at the root of the current media and government interest in UFOs. Success had been limited. There was some UFO-friendly legislation (shepherded by Mellon) and a lot of media coverage. But the good evidence always seemed just out of reach, behind the walls of government secrecy.

Enter Grusch. His legal issues meant they had to tread carefully. A plan was formed. Mindful of the attention the story would bring, Grusch's internet presence was scrubbed, including his brief career as a realtor. Media inquiries were made in March 2023. Kean and Blumenthal were brought back to write Grusch's story. Feelers were put out to media outlets. Rumors started to swirl in the UFO groups on Twitter and Reddit about a possible whistleblower.

UFO-friendly politicians were curated and prepped. Congressman Tim Burchett foreshadowed the big reveal, saying crashed alien technology was likely "being reverse-engineered right now" (Cook 2023).

Pilots Ryan Graves and David Fravor give congressional testimony along with David Grusch.

In April, Kean and Blumenthal interviewed Grusch and wrote their article. A preliminary draft was offered to *The New York Times*, which rejected the story this time. They then went to *The Washington Post*, which agreed to publish it with sufficient fact-checking.

The following month, an Australian journalist with a long history of UFO stories, Ross Coulthart, recorded an interview with Grusch. At about this time, Grusch was also going on something of a roadshow with Nolan and others, reportedly visiting Canadian opposition members of Parliament and other officials and politicians in the United States. Things were going great.

The Rush to Disclosure

Suddenly though, the plan changed. One member of the team, lawyer Daniel Sheehan, accidentally mentioned David Grusch's name on a podcast. People started to dig in and make connections. Grusch got phone calls at his home asking about UFOs. Suddenly there was pressure to get the story out.

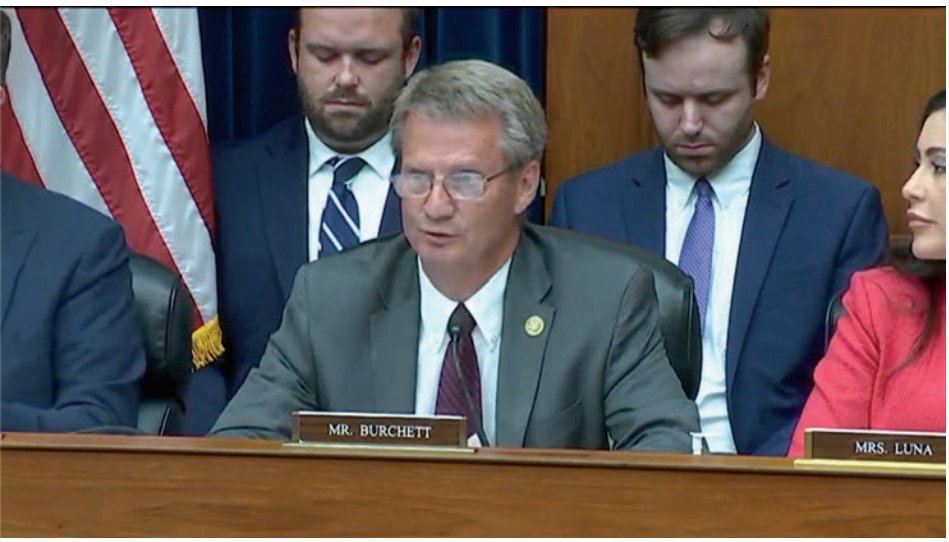
They asked *The Washington Post* if they could publish sooner. The newspaper declined, citing a lack of time for full fact-checking. So they went with a small online UFO-friendly media outlet called *The Debrief*, which leaped at the chance to publish such a big story. They were more flexible with the fact-checking schedule, and on June 5, 2023, David Grusch was revealed to the world (Kean 2023).

The story they published seems almost tame in light of subsequent events. It mostly covered Grusch's history, credentials, and reputation (vouched for by several people). But the core of it was still extraordinary: the government had recovered "intact and partially intact craft" of extraterrestrial origin.

A few days later, an edited version of Coulthart's interview with Grusch was published on NewsNation—a fledgling TV news station owned by Nexstar Media, who also owns Knapp and Corbell's Mystery Wire website.

The interview went far beyond Kean's article. Grusch repeated the claim of recovered technology but added that there were also recovered alien bodies. Not only that, but the aliens had, on occasion, killed humans. Grusch spoke carefully but also hinted that there were multiple races of aliens involved and that the U.S. government may have an "agreement" with one of them. Oh—and by the way they might also be from another dimension.

It wasn't just the American government; apparently other world powers were in the same situation. Everyone—China, Russia, and presumably other countries—not only had crashed flying saucers but were trying to reverse-en-



Representatives Tim Burchett and Anna Paulina Luna at the hearing

gineer them. Did they all have alien bodies? Did they have agreements with murderous malevolent interdimensional beings? It was all a bit vague.

Too Much Disclosure

The claims were extraordinary, and many UFO enthusiasts lapped it up as confirmation of what they already suspected (or "knew"). But others recognized that the claims went a bit too far. Even Leslie Kean seemed annoyed—and blindsided. Grusch had never told her about the alien bodies. But even if he had, she confessed, she would not have written about them, as that wasn't her focus. Kean has admitted in the past that she tones down UFO stories to make them more acceptable.

The rest of the media seemed off balance; very few of them covered the story. NewsNation got massive viewing figures for the interview and so had extensive subsequent coverage of the topic—even interviewing me. But alien craft and bodies didn't make it to the front page anywhere else. It was just too weird—and, crucially, lacking in evidence. Grusch presented no documents (in public) and relied mostly on what *he claimed to have been told* by unnamed sources, things he could not share in detail.

The Circus in Congress

The politicians who were courted by the promoters had fewer qualms. Tim Burchett teamed up with Florida freshman representative Anna Paulina Luna and managed to arrange for a congressional hearing to be held a few weeks later.

This was fêted by the UFO community, once more, as the (or at least *a*) long-awaited "disclosure." Multiple whistleblowers were going to come forward. Names would be named. The locations of the UFOs would be revealed. It would be the government finally forced to admit they had alien bodies.

No such thing happened. Instead of additional whistleblowers, two military pilots, Ryan Graves and David Fravor, simply repeated stories of UFO encounters that they had told many times over the past decade. Very little was new.

Grusch said less than he did in his NewsNation interview. Multiple times he would be asked interesting questions, only to respond that he could not discuss that matter in a public setting. He did reiterate that there was a secret alien technology reverse engineering program and that there were bodies (or, at least, "biologics"). But no actual evidence of this was given; nobody was even told where to look.

Also present at the hearing was the team that had put him there. Knapp and Corbell sat just behind Grusch, framing him in every shot. Burchett entered statements from them into the congressional record (it was later revealed that they were supposed to speak at the hearing). Sheehan, Mellon, and Kean were all backstage, watching their creation.

What's Happening?

Some people think Grusch is lying, but I tend to agree with Chairman of the Joint Chiefs of Staff General Mark Milley that Grusch "was trying to say whatever he thought was true" (Wolfgang 2023). Grusch seems to believe his claims, but given their fantastical nature, the utter lack of evidence, and the dubious supporting cast, it makes it very difficult to give them any credence.

Grusch submitted his impressive resume into the congressional record. It lists many things, but the most recent entry is that he is now COO of the Sol Foundation, which he grandiosely describes as "The premier center for research in the natural and social sciences, engineering, and the humanities." The Sol Foundation was founded by Garry Nolan and Chris Mellon to support "research into and the understanding of Unidentified Aerial Phenomena." Like their previous endeavor with Tom DeLonge, it seeks to actualize a baseless but deeply held belief in alien visitors.

This is an evolving story, and we should know more after this goes to press. But something strange is going on. Individuals' beliefs in aliens are getting mixed up with secret government programs, perhaps even deeply hidden programs. Relationships within the military-industrial complex worth billions of dollars might come under scrutiny, or perhaps this is all a big distraction or a giant misunderstanding. Time, I hope, will tell. ■

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[SKEPTICAL INQUIREE BENJAMIN RADFORD

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Why Billionaires Are Not Dragons

Q: **What do you make of the memes going around comparing billionaires to hoarding dragons and monkeys? Are billionaires hurting the world by hoarding their obscene wealth?**

—Rich H.

A: I'd seen many of the social media memes that Rich was referring to (see Figures 1 and 2), which were widely—if uncritically—shared among my progressive friends. Despite the sea of enthusiastic Likes and Shares, I hadn't given them much thought until I was asked to critique their arguments.

Criticizing the rich is a venerable populist tradition; it's very easy to frame stories as pitting the scrappy have-nots against the elite upper crust. From Marie Antoinette's apocryphal comment to *Caddyshack*, Ebenezer Scrooge, J.R. Ewing, Montgomery Burns, and Elon Musk—not to mention Illuminati and Bilderberg conspiracies—it's hard to find a more common pop culture trope. Everybody loves to hate the so-called one-percenters who hoard the world's wealth and leave scraps for the rest of us.

For some it makes good, tribal—if reductive—social media fodder. But critical thinking principles caution against both overgeneralizations and faulty analogies. Growing up in a lower middle-class home on a dirt road in a small town in one of the poorest states, I was raised to not judge other people based on how much money they have. I neither looked down on those poorer than us nor looked up to those wealthier. I have no dog in the fight and no reason to either defend or malign the uber-rich. My interest is instead in the validity of the analogy; regardless of

Illustration by Celestia Ward

how you feel about billionaires—and polls show they're widely hated, not admired—either these memes make a good point or they don't.

As this is a contentious topic, let's pin down definitions to avoid weasel words and goalpost moving. *Merriam-Webster's Collegiate Dictionary*, as authoritative as they come, defines *hoard* as "a supply or fund stored up and often hidden away" and *hoarding* as "the practice of collecting or accumulating something (such as money or food)." Key to both is the theme of vast accumulated goods kept away from others and reserved for private use.

Billionaires are not like dragons in fundamental ways, most importantly that they can't (and don't) actually hoard wealth. Ultra-rich people don't literally own billions of physical dollars in the way that Smaug physically sits on gold and treasure. Instead, owning five billion dollars and being *worth* $5 billion on paper are two very different things. That's because the value isn't tangible; it's not a zero-sum game in which if you have something (say, a house, car, or $100 bill) that, by definition, means someone else doesn't have it. In the case of wealth, a person can (and usually does) get rich when the value of a company stock increases. But that increase doesn't mean someone else loses that money or value; if the value of your stocks goes up $100, it doesn't mean someone else doesn't have that $100. In other words, value or worth can't be hoarded; just because one person is worth $X doesn't mean that one or more other people have a diminished sum value of $X.[1]

This is the common confusion between *money* and *wealth*; they are not the same thing. *Personal wealth*, as an economics term, is calculated by taking the total market value of all a person's assets and subtracting their debts. Those resources can be anything from houses to vehicles to diamonds or stacks of dollar bills. But for the wealthiest, the bulk of their wealth is in investment and equity. Money, on the other hand, is a tangible means of storing that wealth. The most conspicuous form is currency, such as a $20 bill, but it can take other forms (such as treasure or bananas). Wealth often includes money—but money is not necessarily wealth.

This is Smaug, the dragon from The Hobbit. Smaug famously stole a mountain full of gold. So full that he sleeps buried under gold. We're talking literal tons and tons of gold by weight.
Forbes ranks Smaug as the second wealthiest fictional character. He had been first, but the price of gold took a tumble and now his vast, overwhelming fortune is only worth an estimated $51,400,000,000.00, or $51.4 billion.
That means that EVEN THOUGH he has an ENTIRE MOUNTAIN full of almost nothing but solid gold, Smaug would rank as the FIFTEENTH wealthiest American.
Fourteen Americans have more money than a gold-hoarding dragon.
Please consider that next time you say deca-billionaires deserve their wealth and shouldn't pay their employees living wages.

Figure 1. Meme circulating widely in 2022 and 2023 comparing J.R.R. Tolkien's dragon Smaug to billionaires

In our Smaug example, he's (literally) sitting on piles of *money*, which the meme subtly and erroneously conflates with *wealth*. This is relevant because literally no one is hoarding so much money that it impoverishes anyone else. You can't really "hoard" something that's abstract, such as potential stock value. Physical items can be hoarded; value cannot because anyone can add value to a given product or service. For example, a person offering a lawnmowing service can add value by agreeing to work on weekends or later hours or by prioritizing clients more than their competition. A person selling lemonade or cookies can add value by offering better (or unusual) ingredients or a family recipe that others don't have. And so on.[2]

Smaug and Slog, or Why Billionaires Don't Hoard

A better analogy would be a different dragon—say, Slog, Smaug's brother. Slog lives in the next hamlet over. He's just as wealthy as Smaug, but he's not sitting on piles of gold, because mounds of metal are uncomfortable and caves are stuffy. Instead, like any sensible dragon, he prefers to nest comfort-

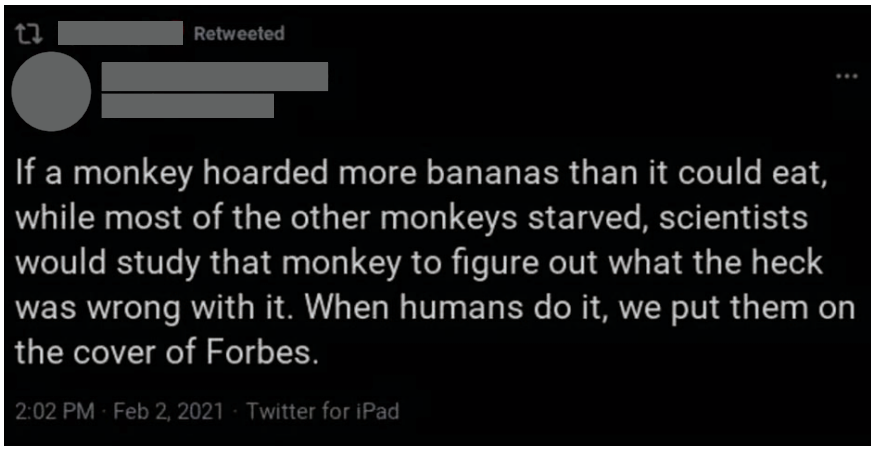
Retweeted
If a monkey hoarded more bananas than it could eat, while most of the other monkeys starved, scientists would study that monkey to figure out what the heck was wrong with it. When humans do it, we put them on the cover of Forbes.
2:02 PM · Feb 2, 2021 · Twitter for iPad

Figure 2. A viral February 2021 tweet comparing banana-hoarding monkeys to billionaires

ably on mountains of springy straw bales in the forest kindly provided by stout centaurs. Besides, what use does a dragon have for gold coins anyway? They're not going to fly down to peruse the local markets for clothing or used sheep. Unlike the villainous Smaug, who forces locals to bring him treasure, Slog arranged hundreds of years ago to protect the locals from threats (including Smaug); in return, he was given title to all the lands within eyesight (and dragons have very keen eyes!). It wasn't much hundreds of years ago, mostly valleys and streams and a fairy-infested forest or two. But over the years more people settled there, drawn by the benevolent dragon's protection. Finally, it included a kingdom, silver mines, and a river used as a trade route. The land became very valuable, and eventually his worth rivalled that of Smaug. Both were extraordinarily wealthy, but Slog's wealth was tied to the value of the land he let others use and profit from.

While the bulk of Smaug's wealth is in physical objects, the bulk of Slog's wealth is in investments. Billionaires are more like Slog than Smaug. They neither have nor hoard treasure but instead invest their wealth in businesses, which in turn buy equipment and hire employees. This is not any praise of "trickle-down economics" but merely a recognition that investment, by definition, circulates money and is the *opposite* of hoarding.

In fact, *hoarding money results in a net loss.* If you hide $100,000 under your mattress or in your backyard, you have hoarded it—keeping it all for yourself and preventing anyone else from getting it. But if you dig it out in twenty years, you'll find that the purchasing power of that sum has dropped significantly due to inflation. Because hoarded (that is, static) wealth cannot earn interest or yield a profit, it is precisely what rich people *don't want to do.* This is what the memes get exactly wrong: billionaires don't become and stay rich by hoarding; that's the last thing they want to do with their money.

There are related myths and assumptions, such as that the only way to accumulate a net worth of so much money is through evil, if not outright unethical, means. Whether or not "the love of money is the root of all evil," merely owning (or in this case having a net worth of) a specific quantity of something (money, in this case) doesn't magically make a person evil, malicious, or corrupt. Part of the misperceptions about billionaires is what psychologists call availability bias; the best-known and most salient billionaires are ostentatious (and often obnoxious). They go up into space, down to see the *Titanic*, and cruise around on yachts with gold-plated toilets.

But that's a small, unrepresentative sample. George Clooney, David Copperfield, Larry David, Rihanna, Matt Groening, Elton John, Magic Johnson, Michael Jordan, Jacqueline Mars, Paul McCartney, Tyler Perry, MacKenzie Scott, Jerry Seinfeld, Bruce Springsteen, Taylor Swift, Jay-Z, and countless others are uber-wealthy and presumably didn't get to be that way through unethical behavior or capitalist exploitation. Then there are people who have won $1 billion or more in lotteries and who presumably did not magically become evil or unethical the moment the winning numbers were selected.[3]

The question of whether billionaires "deserve" their wealth is another matter entirely, and there are plenty of reasons to be outraged at economic inequities, including the broken individual income tax system that requires them to pay an average rate of only 8.2 percent. A strong case could be made for a wholesale revision in the tax codes so the rich pay more taxes as well as much better regulation (see the documentary *The Panama Papers* for an infuriating look at tax evasion by the uber-rich). To solve a problem, you first have to understand it, which is why economic nuances such as the difference between wealth and money—or why billionaires don't hoard—is key to addressing inequities. As satisfying as it might be to envision billionaires as dragons, it's a bad analogy. Unless it's Slog—but Smaug makes a better villain. ■

Notes

1. Skeptical stalwart Brian Dunning, in the July 27, 2021, episode of his show *Skeptoid* (#790), offered an analogy to clarify this common misconception: "Let's say I start a small business making bedazzled ukuleles, and you think it's such a great idea that you invest $10,000 in it in exchange for 10 percent ownership. That gives the company a valuation, on paper, of $100,000. Since I own the rest of it, I am now worth $90,000 in stock; literally, my net worth is $90,000 more than it was yesterday. But the government didn't print $90,000 in new cash, so does that mean that everyone else in town must have just collectively lost $90,000? No. We created *new wealth.*"

2. Value can be added through physical objects or processes that are finite and that *can* potentially be hoarded. For example, a rich company can add value to their products by including more expensive or cutting-edge software that a mom-and-pop company can't afford. But that expensive ingredient or software isn't being "hoarded"; it's private, not public, property in the same way that owning a home isn't "hoarding" it.

3. Lottery winners are an interesting and unique case; their wealth is theoretically liquid and not tied to any stock valuation. In other words, they could cash the giant check and literally demand $1 billion in currency from some hapless bank teller. Unlike virtually all other billionaires, they *do* in fact literally have that much money and thus could in fact hoard it. However, their fabulous wealth did *not* come from any economic exploitation (other than, arguably, of the mathematically innumerate); the money came from millions of others who exercised their economic agency and, like the winner, chose to buy lottery tickets.

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PLANNED GIVING BRIEF

Ending the Year Well

Get a head start on your year-end tax planning.

IRA Charitable Rollover

Congress made permanent the law that allows people age 70½ or older who own an IRA to make gifts directly from their IRA to charity. For many people, this is the best tax-wise way to give. An IRA rollover gift will not be included in your taxable income and may qualify for your required minimum distribution.

Outright Gift of an Asset

If you wish to make a gift to support our cause this year but are concerned about preserving your cash resources, consider a gift of an appreciated asset. A gift of securities, business interests or real estate can provide you with significant income and capital gains tax savings, often exceeding the benefits of a cash gift.

Donor Advised Fund (DAF)

If you are looking for an end-of-year deduction but want more time to make thoughtful giving decisions, consider a donor advised fund (DAF). Our organization can use your tax deductible gift to establish a DAF in your name. You can make grants from your DAF now and in the future to support our work and other causes you care about.

Zero-Tax Gift and Sale

If you are planning to sell an asset like securities, real estate or a business, before you sell, consider a "zero-tax" charitable gift and sale. By making a gift of part of the asset before the sale, you can use a tax-saving charitable deduction to significantly lower or eliminate the capital gains tax on the sale.

Consider these worthwhile strategies before the year's end.

Selling securities, real estate or a
Consider planning strategies to avoid capital gains tax

Age 70½ or older?
Make a gift from your IRA

Own an IRA and/or 401(k)?
Maximize your deductible contributions

Expect to be in a higher tax bracket ?
Talk to your tax advisor for solutions to manage taxes

Expect to be in a lower tax bracket or can control income?
Shift income to this year

Have investment losers?
Sell to offset winners and lower your capital gains tax

Extra medical expenses?
Establish a health savings account (HSA)

Have state taxes, property taxes, medical bills?
Accelerate deductible expenses

May We Help?

If you would like further information, please contact us. We can help you create a plan that meets your needs and goals.

This information is not intended as tax, legal or financial advice. Gift results may vary. Consult your personal financial advisor for information specific to your situation.

Under federal rules your benefits may be different from this example. Please contact us for your specific benefits.
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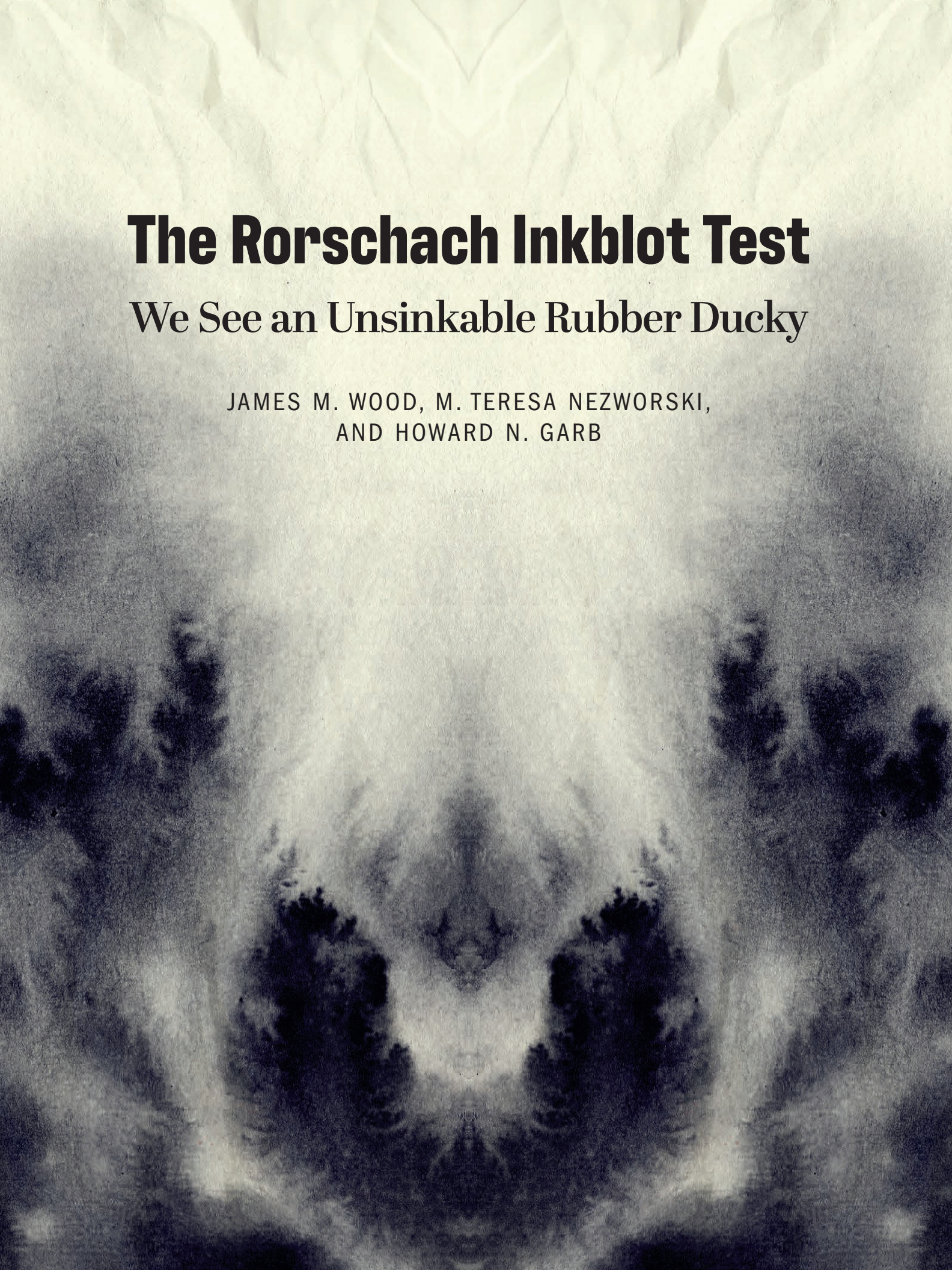
16CP043.1

The Rorschach Inkblot Test

We See an Unsinkable Rubber Ducky

JAMES M. WOOD, M. TERESA NEZWORSKI,
AND HOWARD N. GARB



Editor's Note: In August 2023, the Daily Mail *ran a story titled "Inkblot Test Will Reveal If You're Unable to Move on from the Past and Ever Be Happy," indicating that the test "can be used to reveal info about your personality." This story was based on a video from a TikTok content creator and psychology student who was pulling from the book* The Body Keeps the Score. *That book will be the focus of future content in* Skeptical Inquirer, *but for now we share an article that critiques the Rorschach Inkblot Test. This article was written prior to the publication of the story in the* Daily Mail, *but it sheds light on the accuracy of the claims within.*

The Rorschach Inkblot Test was developed more than a century ago by Hermann Rorschach, a Swiss psychiatrist who worked with patients with severe mental illness in a hospital for the "insane" (Searls 2017). Rorschach created a set of odd, intriguing inkblots, with some pastel colored and others gray and white. He then showed the blots to his patients and asked them to describe what they saw in the quirky spatters and clouds of color. Rorschach came to believe that his patients' responses—that is, their descriptions of the blots—revealed their mental disorders and personalities. For instance, he had the impression that patients who reported many responses involving color were emotional and impulsive.

In 1921, Rorschach ([1921] 1964) published *Psychodiagnostics*, a book that included ten of his inkblots and described how his patients responded to them. Shortly afterward, he died unexpectedly of appendicitis at the age of thirty-seven. Although his book had attracted little attention while he was alive, in the following years Rorschach's reputation and test gradually spread across Europe and the United States. By 1950, the Rorschach Inkblot Test had become highly popular among American psychologists, who considered it a sort of mental X-ray allowing them to peer deep into the minds and hearts of their patients.

To this day, some psychologists continue to claim that the Rorschach Inkblot Test provides a rich and complete picture of a patient's personality and psychological problems. Advocates of the Rorschach test like to say that other assessment techniques, such as questionnaires and clinical interviews, reflect merely what patients are willing or able to tell about themselves, whereas the Rorschach test reveals much more. It supposedly has the power to expose emotions, thoughts, and other psychological qualities that are hidden out of sight inside the patient, beyond the patient's conscious awareness. That is, the Rorschach test is considered a type of projective test.

The Rorschach test is claimed to be highly sensitive for identifying psychiatric symptoms and diagnosing mental disorders. Advocates claim that it has a solid scientific basis and is widely accepted among clinical psychologists as useful in clinical and legal settings. In the past, claim advocates, the Rorschach test was unfairly attacked by a small number of critics who misunderstood its unique potential for providing clinical insight. Advocates concede that a few of the criticisms leveled against the test were legitimate, but they claim that the problems identified have been corrected in present-day versions of the Rorschach test.

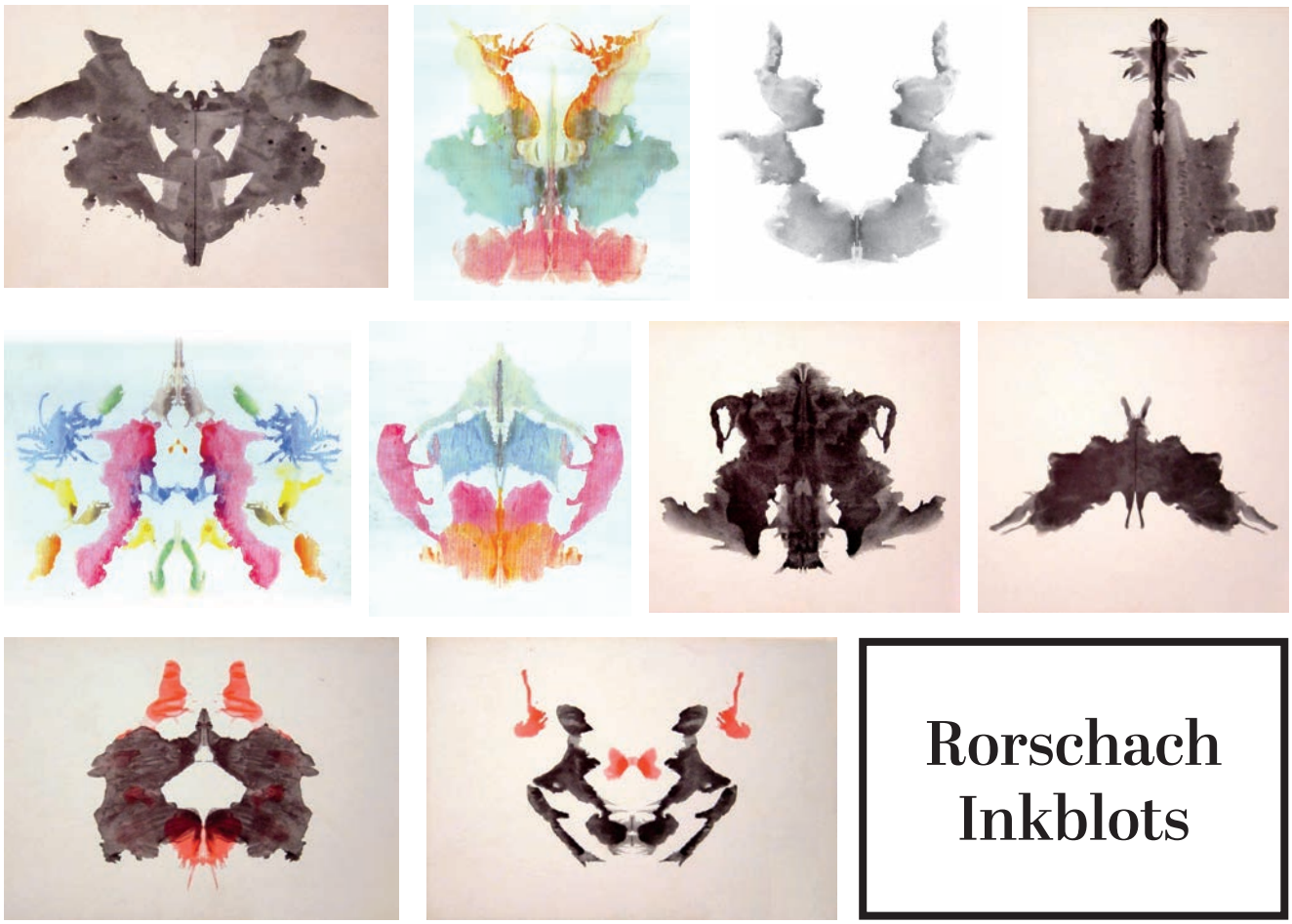
Examining the Claims

The Rorschach test is administered one on one. The psychologist, sitting beside the patient, hands them ten Rorschach cards, one at a time, and asks, "What might that be?" Each card is approximately the size of a *National Geographic* magazine cover and bears one of the intriguing inkblots that Hermann Rorschach created more than a century ago (Exner 2003; Meyer et al. 2011).

The inkblots are intentionally ambiguous. Patients see many things in them, such as bats, lobsters, flowers, monsters, and scenes of people fighting or dancing. Patients typically give about two responses per card or about twenty responses total for the entire test. The psychologist attempts to write down each response in the patient's exact words. After the patient has responded to all the cards, the psychologist goes through them a second time, asking the patient to clarify exactly what images were seen in the blots and where they appeared.

After the testing session is over, the psychologist scores and interprets the patient's responses. Scoring the Rorschach test is challenging and time-consuming because there are dozens of scores to be calculated. For instance, one important score indicates the number of responses given by the patient that involve the use of color. Another indicates the number of responses that describe people acting in cooperation with each other ("two women preparing a meal together"). There are also many Rorschach "composite" scores, which are calculated by adding or subtracting two scores from each other or by dividing one score by another. For instance, one composite score is calculated by first adding up the number of responses that describe people moving and then dividing this sum by the number of responses that involve the use of color.

After the Rorschach scores have been calculated, the psychologist interprets their meaning. In most cases, the scores have a straightforward interpretation. For example, as mentioned earlier, if a patient has given a high number of color responses, this will generally be interpreted to mean that the



The ten inkblots printed in *Rorschach Test—Psychodiagnostic Plates*. Image Credit: Wikipedia / Public Domain.

patient is impulsive or tends to act under the influence of strong emotions. As another example, if a patient has given several responses that describe people engaged in cooperative activity, the psychologist will probably conclude that the patient views interactions with other people as being positive and helpful rather than antagonistic.

The Rorschach interpretations made by psychologists are typically used in clinical settings to shed light on patients' behaviors, personality, and psychological problems and to help guide treatment decisions. The Rorschach test is also used in legal settings, for instance, for child custody disputes, criminal trials, and parole hearings.

Is the Rorschach Test Good for Anything?

Considering the Rorschach test's long history of scientific controversy, it is sensible to ask whether the test is good for anything. The answer is, "Yes, the Rorschach test can do a few things well." Specifically, it has some validity for detecting disorders such as schizophrenia that involve perceptual distortion and disorganized thinking. In addition, some of its scores are related to IQ (Mihura et al. 2013; Wood et al. 2015).

When conducting his research with hospital patients, Hermann Rorschach scored each of their responses as having either "good" form quality or "poor" form quality. "Good" form quality indicated that the image reported by the patient fit the shape or "form" of the inkblot, whereas "poor" form quality indicated that the image didn't fit the blot's shape. For instance, the shape of one of Rorschach's inkblots very strongly resembles a bat. For this inkblot, if a patient reported seeing a "bat" or "butterfly," Rorschach scored the response as having good form quality. If the patient reported seeing a "cat" or "kangaroo," the response was scored as having poor form quality because the shape of these animals does not fit the blot's shape.

Rorschach's book reported that patients with schizophrenia tended to give an unusually high number of responses with poor form quality. Research in the 1950s confirmed Rorschach's observations, as have more recent studies (Chambers and Hamlin 1957; Little and Shneidman 1959; Mihura et al. 2013). Many people who take the Rorschach test, including individuals without any disorders, may give at least a few responses with poor form quality. However, patients with schizophrenia, a very severe mental disorder involving loss of contact with reality, tend to give substantially more such responses than other people. So do other patients with perceptual distortions, severe mental impairments, or psychoses.

In the late 1940s and early 1950s, researchers demonstrated that patients with schizophrenia also tend to show

disordered thinking or disorganized speech when taking the Rorschach test (Kleiger 1999; Kleiger and Mihura 2021). That is, these patients often display illogical reasoning or say odd things when responding to the blots. For instance, a patient might say, "This little red blot looks like a drop of blood. And it looks like an island in the ocean. It must be Haiti, because that's the island where there's been a lot of bloody fighting." Such odd, illogical responses are more frequent not only among patients with schizophrenia but also among patients with borderline personality disorder and other mental disorders with disorganized thinking or speech (Mihura et al. 2013). Although the Rorschach test is a valid measure of disordered thinking or disorganized speech, an interviewer can also detect these problems without the Rorschach test, and so it is not clear how often the addition of a Rorschach test to an interview will result in more accurate diagnoses.

Other Rorschach scores are related to intelligence and mental ability. For instance, studies have shown that individuals with higher IQ scores tend to give more responses on the Rorschach test than other people, and those responses tend to be more complex, with several parts of the inkblot combined and integrated into a unifying image. In addition, research has shown that patients with higher IQs tend to use more sophisticated vocabulary when describing what they see in the blots (Davis 1961; Mihura et al. 2013; Trier 1958).

Rorschach scores often do not measure what they are supposed to measure. The test is generally, but not always, unrelated to other mental disorders, diagnoses, and symptoms (Meyer et al. 2017; Wood et al. 2000). While a recent review of the published scientific literature identified several Rorschach scores as potentially useful for identifying the presence of distressing emotions, impulsivity, dependency, current level of coping ability, or other characteristics (Mihura et al. 2013), the validity and clinical utility of most of these scores has been questioned and remains controversial (Wood et al. 2015; see also Wood et al. 2003, 244; but see Mihura et al. 2015).

Rorschach Test Myths and Problems

As the preceding section has explained, the Rorschach test can do a few things relatively well. The test has been controversial for more than half a century not because it is worthless but because it has so often been promoted with misleading claims and used for purposes for which it has little or no scientific support. Furthermore, under some circumstances use of the Rorschach test can cause serious harm to patients. The present section identifies the myths that are most commonly held forth on behalf of the test and then discusses how the use of the Rorschach test can cause harm.

Claim #1: The Rorschach Test Provides a 'Rich' and 'Complete' Understanding of Personality

In the 1940s and early 1950s, when the Rorschach test was at its peak popularity, enthusiasts claimed that the test offered a rich source of clinical insight and a complete picture of a patient's personality and psychological problems. For instance, according to Bruno Klopfer, the most influential Rorschach expert of that era, a skilled interpreter could extract a total psychological understanding of a patient simply by examining the inkblot responses, without any other clinical information about the patient's history or test scores (Klopfer and Kelley 1946).

Klopfer's grandiose claims should have awakened serious doubts among the members of the psychological community, particularly because there was no research to support them. Imagine that a pharmaceutical company, without any good scientific evidence, were to announce that it had developed a blood test that could provide a "complete" medical understanding of every patient and thus eliminate any need to conduct additional physical examinations or diagnostic imaging. Such a claim would instantly be recognized as preposterous by the medical community. However, Klopfer's equally absurd claims were widely accepted by psychologists of the early 1950s. Only in the following years, as hundreds of studies, often by leading researchers, reported disappointing results did the dismal truth about the Rorschach test become clear: Far from giving a "complete" picture of patients' personalities, it was worthless for most purposes. As summed up by Lee J. Cronbach of Stanford University, one of the most respected psychologists of the twentieth century: "It is not demonstrated that the test is precise enough or invariant enough for clinical decisions. The test has repeatedly failed as a predictor of practical criteria. … There is nothing in the literature to encourage reliance on Rorschach interpretations" (Cronbach 1956, 184). Despite the mainly negative research findings, enthusiasm for the Rorschach test has remained inexplicably high among a minority of clinical psychologists who often show the same unrealistic zeal as in the 1940s. At present, there are two leading approaches or "systems" that these psychologists use when administering, scoring, and interpreting the Rorschach test. The first and more popular approach is John Exner's "Comprehensive System for the Rorschach," or "CS" (Exner 2003). The second and newer approach is the "Rorschach Performance Assessment System," or "R-PAS," introduced in 2011 (Meyer et al. 2011).

Both systems have been promoted by their creators in extravagant terms. Exner, like Klopfer, has claimed that his Rorschach system, the Comprehensive System, provides a "complete understanding" of a patient (Exner 2003). The R-PAS developers claim that its approach yields "rich, multi-faceted descriptions," contains "a wealth of idiographic information," and provides psychologists the means of "observing and measuring personality in action" (Meyer et al. 2011, 1–2, 320).

Such expansive promises are misleading, however. Although both the Comprehensive System and R-PAS include dozens upon dozens of Rorschach scores, these scores do not reveal dozens upon dozens of aspects of personality. In fact, there is no well-accepted scientific basis for believing that these scores reveal much about personality beyond their relation to perceptual distortion, thought disorder, or intelligence. It is true that research has shown that a handful of scores—perhaps eight or so—may have a weak relationship to other aspects of personality. For the practicing clinician, however,

these Rorschach scores cannot be interpreted in any way that is both scientifically grounded and useful for guiding clinical work. Psychologists who use the Rorschach test in hopes that its multitude of scores will provide a "rich" and "complete" understanding of their patients are misleading both themselves and the patients.

Claim #2: The Rorschach Test Is Like a Psychological X-Ray

Another famous claim made by Bruno Klopfer in the 1940s was that the Rorschach test is like a psychological X-ray (Klopfer 1940, 26). He promoted the idea that the test has the power to look inside a patient and detect hidden things—problems that psychiatrists and psychologists cannot hope to observe otherwise or that the patient is unaware of and thus cannot describe. According to Klopfer, a psychologist using the Rorschach test has privileged access to information about patients that is simply unavailable to other mental health professionals.

Research in the 1950s and afterward exploded Klopfer's claim that psychologists using the Rorschach test have special access to insights that their colleagues lack. In fact, studies showed that psychologists who relied on the Rorschach were actually less accurate in their assessments of patients than were psychologists who simply read the patient's history or used the Minnesota Multiphasic Personality Inventory (MMPI), a psychological test filled out by patients to report their psychological symptoms and problems (Guilford 1948; Kelly and Fiske 1950; Holtzman and Sells 1954; Little and Shneidman 1959; Sines 1959; Whitehead 1985).

The seductive notion that the Rorschach test provides a special window into patients' innermost unconscious feelings and thoughts is still alive today, however. For example, the creators of the R-PAS, the new Rorschach system, claim that the Rorschach test reveals "implicit" aspects of personality, by which they mean "characteristics that may not be recognized by the respondent him or herself" (Meyer et al. 2011, 1). They also claim that "the Rorschach can provide psychological information that may reside outside of the client's immediate or conscious awareness" (Meyer and Mihura 2020, 283). For example, according to the creators of the R-PAS, several scores indicate "implicit" distress. Because these negative feelings are "implicit," claim the R-PAS authors, the patient may be unconscious of them and thus cannot be said to actually feel the distress (Meyer et al. 2017, 76–77).

The R-PAS scores that supposedly indicate "implicit" distress are among the controversial scores we have already discussed. Furthermore, the notion proposed by the R-PAS authors that these scores indicate unconscious distress leads to strange and troubling paradoxes: If a person is psychologically distressed but does not know it, is that person really distressed at all? Isn't that like claiming that a person feels "unconscious pain," even though they say they aren't feeling any pain at all? And what if a patient reports that they feel fine, but their Rorschach test indicates "implicit" distress? Should a psychologist using the Rorschach test disregard what the patient says and conclude that the patient is psychologically in pain, suffering perhaps from "unconscious depression"?

Claim #3: Validation Studies Are Unnecessary; 'Clinical Validation' Is Enough

Validity is a scientific term that can be used to describe how well a test measures what it is supposed to. To evaluate the validity of psychological and medical tests, researchers undertake what are called validation studies. For example, in 2002, researchers at Clemson University conducted a validation study of the Beck Depression Inventory–II (BDI-II), a questionnaire used to measure depressive symptoms (Sprinkle et al. 2002). They found that in a sample of therapy patients at a university counseling center, the correlation of BDI-II scores with the number of depressive symptoms reported by the patients during a diagnostic interview was 0.83. This correlation, called a validity coefficient, was very high and indicated that the BDI-II has strong validity. That is, the study showed that the BDI-II has a strong relationship with depression, the disorder it is supposed to measure.

In the 1930s and 1940s, Klopfer contended that such validity studies were unnecessary where the Rorschach test was concerned. Instead, he and his followers proposed to substitute a procedure that they called "clinical validation" (Klopfer 1939, 47). Specifically, they argued that the Rorschach test's worth could be demonstrated by positive testimonials from the psychologists who used it clinically (Krugman 1940).

Klopfer's dismissal of systematic validation studies, and his trust in the testimonials of clinicians, ignored the hard-earned experience of the American medical profession during the preceding half century. In the years leading up to the 1930s, bitter experience had shown that testimonials by physicians about the effectiveness of medical procedures could be misleading and downright dangerous (Haines 2002; McCoy 2000; Young 1967). In several highly publicized scandals, prominent doctors enthusiastically promoted scientifically unsupported medical tests and medications that were later found to be harmful and even fatal to their patients.

At the time that most Rorschach test users were uncritically accepting Klopfer's dubious ideas about clinical validation and the value of testimonials, at least a few perceptive psychologists resisted. For example, Donald Super of Columbia University warned his Rorschach-smitten colleagues: "Unorganized experience, unanalyzed data, and tradition are often misleading. Validation should be accomplished by evidence gathered in controlled investigations and analyzed objectively, not by the opinions of authorities and the impressions of observers" (Buros 1949, 167).

The warnings by Super and other skeptics were eventually vindicated in the 1950s, as we have already described, when the results of systematic validity studies showed that the Rorschach test was largely worthless and that clinicians' glowing testimonials on its behalf had been seriously in error. One might think that such a debacle would have convinced Rorschach test users of the folly of clinical validation and the value of careful research. But instead, many Rorschach test advocates simply brushed aside the research. For instance,

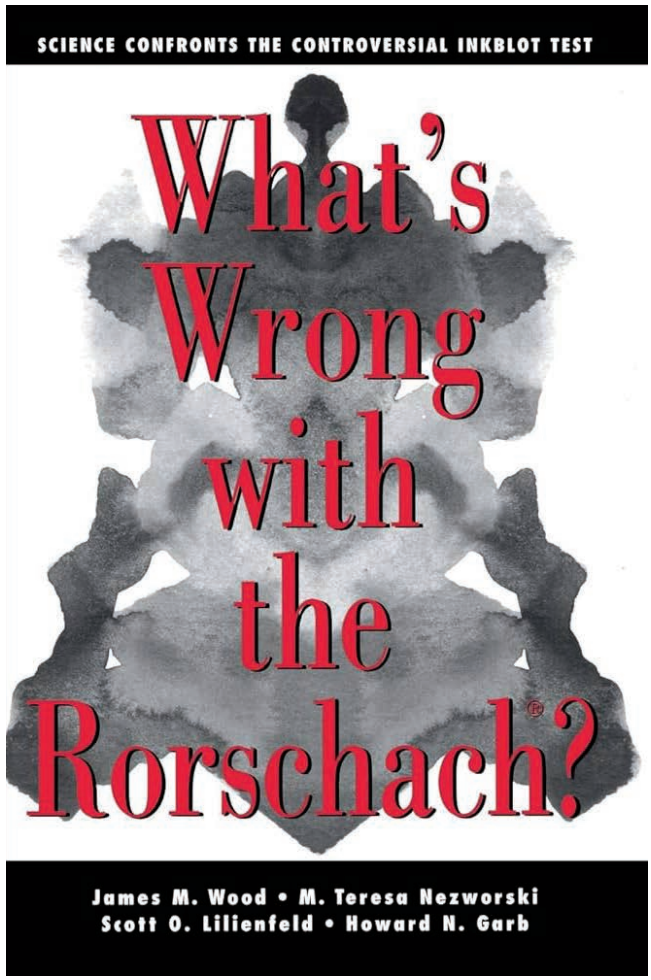
Klopfer advised his followers to ignore the negative scientific findings regarding the test (Klopfer and Davidson 1962, 24). Similarly, Samuel Beck, another prominent Rorschach leader, dismissed the findings as irrelevant: "Let it be said at once and unequivocally that validation such as is sought in a laboratory experiment is not at present to be expected for whole personality findings, whether by the Rorschach test or by any other" (Beck 1959, 275).

The Rorschach tradition of using scores that lack support from systematic validation studies has never disappeared and continues to the present day. The Comprehensive System and the R-PAS both include a substantial number of Rorschach scores with little or no research support. Clinicians who use these scientifically untested scores are showing the same reckless naivete, and running the same risks with patients' well-being, that Klopfer and his followers did in the 1940s.

Claim #4: The Rorschach Test Is Trustworthy for Identifying Psychological Disturbances

The last and probably most serious problem with the Rorschach test is its tendency to misidentify people as being psychologically disturbed when all other evidence indicates they are psychologically healthy. Researchers first exposed this flaw more than half a century ago. For instance, in one study in the 1950s, the Rorschach test was administered to a group of men previously identified as well adjusted. The researchers were surprised to find that many of these men's Rorschach scores fell in the abnormal range and falsely indicated maladjustment (Brockway et al. 1954). In another study at the University of California at Berkeley, Rorschach experts evaluated adolescents from the community and identified two out of every three as "maladjusted"—an absurdly high number because, contrary to some stereotypes, most teenagers do not experience marked emotional disturbance (Grant et al. 1952).

As these and other similar findings from the 1950s made clear, psychologists who used the Rorschach test often found psychological disturbance and mental pathology where in fact there was none, a form of bias that is called overpathologizing. Nor has this problem disappeared with more recent approaches to the Rorschach test. Research has shown that the most popular approach to the Rorschach test today, Exner's Comprehensive System, often makes both adults and children appear psychologically disturbed even when no other evidence suggests that this is so (Viglione et al. 2022, 140). For instance, one study found that psychologists using the Comprehensive System misdiagnosed more than 75 percent of psychologically healthy individuals as disturbed (Mittman 1983; see also Exner 1991, 432–433). Another study found that when psychologically healthy school children were tested with the Comprehensive System, their Rorschach scores often wrongly indicated the presence of grave psychological problems, including distortion of reality, faulty reasoning, and difficulty maintaining interpersonal relationships (Hamel et al. 2000). The consequences of overpathologizing can be


SCIENCE CONFRONTS THE CONTROVERSIAL INKBLOT TEST
What's Wrong with the Rorschach®?
James M. Wood • M. Teresa Nezworski
Scott O. Lilienfeld • Howard N. Garb

devastating, particularly in high stakes settings that involve employment issues or legal decisions. For instance, in a legal case known to the authors of the present article (Wood et al. 2003, 301), an African American man sued his employer for racial discrimination. Although his mental health history was unremarkable, a psychologist testified in court that the man was seriously disturbed and that his Rorschach test revealed paranoia and a tendency to distort reality when under stress. Because of the Rorschach test's tendency to overpathologize, its use in legal cases or other high-stake settings has the potential to do serious harm.

Summary and Conclusion

Rorschach scores are related to perceptual distortions, disorganized thinking, and intelligence. However, there are much more valid, comprehensive, and efficient ways to assess these traits. Further, the Rorschach test's relationship to other diagnoses and personality characteristics is highly controversial and has been controversial for more than fifty years. Contrary to myths promoted by its proponents, the Rorschach test does not provide a rich picture of patients' personalities or reveal hidden secrets about their emotions or thoughts. Worst of all, the Rorschach test has a well-documented bias that causes it to misidentify psychologically healthy people as being psychologically disturbed. Use of the test in educational,

employment, or legal settings is strongly discouraged.

In 2003, we published a book titled *What's Wrong with the Rorschach?* along with CSI Fellow Scott O. Lilienfeld, and yet the Rorschach test continues to be used to this day, more than two decades later. With a nod to James Randi, when we look at the Rorschach test, we see an unsinkable rubber ducky. ■

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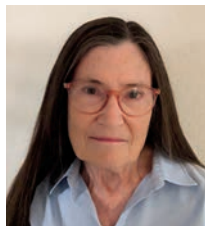

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Inoculating Students against Misinformation by Having Them Create It

Inoculation theory suggests engaging ways to build resilience to misinformation.

MELANIE TRECEK-KING

We are drowning in misinformation. From wellness influencers making wildly inaccurate and baseless nutrition claims to fringe medical "professionals" selling pseudoscientific "treatments" online to conspiracy theorists enticing followers down the rabbit hole on YouTube, it's nearly impossible to avoid exposure. The spread of misinformation has gotten so out-of-control that experts are calling it an "infodemic."

I teach a general-education science course designed to teach skills, not facts (Trecek-King 2022a). The three skills—critical thinking, information literacy, and science literacy—equip students with the ability to find reliable information, draw evidence-based conclusions, and ultimately make wiser decisions.

These skills aren't easy to teach, so with some trial and error (and endless iterations), I landed upon a few useful strategies. First, I provide students with a structured toolkit to help them evaluate claims and provide ample opportunities to practice (Trecek-King 2022b). Second, I present students with a variety of examples of pseudoscience and science denial to underscore important characteristics of science. And finally, I use many active and technique-based inoculation exercises in which students learn the strategies used to mislead by creating the misinformation themselves.

Inoculating against Misinformation

Our beliefs inform our decisions and actions, so being misinformed can have serious consequences. Yet while protecting ourselves from misinformation is essential, trying to debunk every false claim after it pops up can feel like an overwhelming and endless game of Whack-A-Mole.

Thankfully, inoculation theory may provide one solution (McGuire and Papageorgis 1961). Similar to how a vaccine builds immunity to a pathogen by exposing our bodies to a weakened form of the pathogen, we can build immunity to misinformation by exposing our minds to a weakened form of misinformation. We can deliver misinformation in a weakened form by combining two elements: a warning of the threat of being misled and counterarguments or refutations explaining how the misinformation is misleading (Traberg et al. 2022). A growing body of evidence shows that inoculation can train our minds to identify (and therefore not fall for) misinformation and has the potential for large-scale use with long-term protection (Traberg et al. 2022).

There are a variety of types of inoculation (see Table 1). The primary inoculation methods are either fact-based or technique-based (a less studied type is source-based). Fact-based inoculation corrects misinformation with factual explanations and is therefore limited to a particular topic. Technique-based inoculation explains the strategies used to mislead, such as logical fallacies or rhetorical techniques, providing resistance against the same techniques in different types of misinformation (Cook et al. 2017).

Inoculation delivery mechanisms can be either passive or active (another less studied type is experiential). Passive inoculation occurs when the facts or techniques used to mislead are explained to the audience, while active inoculation builds mental immunity by getting people to actively create the misinformation themselves (Roozenbeek and van der Linden 2019).

While it's possible to debunk specific examples of misinformation after exposure, it would be virtually impossible to keep up with the firehose of misinformation. Who has the time or energy? Instead, we can prebunk against broad categories of misinformation by inoculating students against the most common techniques used to mislead.

Educators play an essential role in the fight against misinformation. Classroom activities that combine active and technique-based inoculation provide an engaging way to protect students against some of the most harmful types of misinformation.

Many students believe in various types of misinformation, so it's important to proceed with caution. Addressing misinformation directly can increase engagement and teach students how to recognize (and not be fooled by) them in the "real world" (Mason et al. 2008). However, it's difficult to objectively evaluate beliefs that are tied to our identity or central to our worldview. Therefore, I start with non-triggering misinformation, so students can practice thinking through the techniques and why they're effective and slowly expand to more important "identity" issues. Also, humor always helps!

Activities Combining Active and Technique-Based Inoculation

Imagine a young child watching a magic trick for the first time. If we wanted to help her understand that there was no magic involved, just sleight of hand, we could simply explain what the magician did. But to really help her master how and why she was fooled, we could teach her how to perform the trick herself. These two approaches—passively explaining the trick versus actively doing the trick—can both inoculate against strategies magicians use to mislead. But no explanation can replace the perspective gained from performing the magic trick. (Plus, it's a lot more fun!)

Table 1: Types of Inoculation

Method of Inoculation	**Fact-Based**	**Technique-Based**	**Source-Based**
	Explains how specific examples of misinformation are false with factual explanations. Closely related is issue- or topic-based, which focuses on misinformation around a topic.	Explains the techniques used to mislead. Logic-based inoculation is a subset of technique-based that focuses on logical fallacies.	Reveals that a misleading source is not a credible source of information.
Delivery Mechanism	**Passive**	**Active**	**Experiential**
	Students passively receive the inoculating message, which is communicated in a one-way fashion by the educator.	Students generate the misinformation themselves, as a form of active learning.	Students learn the techniques of misinformation by experiencing being misled.
Order	**Prebunking (prophylactic)**	**Debunking (therapeutic)**	
	Inoculation occurs before exposure to misinformation.	Inoculation occurs after exposure to misinformation.	
Style	**Non-humorous**	**Humorous**	

Reprinted from "Combining Different Inoculation Types to Increase Student Engagement and Build Resilience against Misinformation," by Melanie Trecek-King and John Cook (in press), *Journal of College Science Teaching*.

Classroom activities that combine an active delivery mechanism and technique-based methodology are an effective way to inoculate students against broad categories of misinformation.

Importantly, each activity is followed with a debrief to remind students that the goal was to protect them from misinformation. Therefore, students should use their new "powers" for helping others—and not for fooling them! Students should also be warned against sharing their misinformation, so as not to fool others. To quote Spider-Man: "With great power comes great responsibility."

Inoculation against Logical Fallacies: 'Please Don't Fail Me'

Scientific claims must be logical, so I teach students how to break down the structure of an argument into its conclusion and premise(s) and recognize fallacies that weaken or invalidate an argument (Cook et al. 2018). We hear (and make) arguments all the time, and while they might sound convincing, they're not necessarily logical. Recognizing logical fallacies can be a useful shortcut to identify misleading arguments, but students often struggle.

At the end of a recent semester, I found myself reading the all-too-common "please don't fail me" emails from students fallaciously arguing for why they should pass a course on critical thinking. The irony gave me an idea for an assignment.

In "Please Don't Fail Me," students are instructed to imagine that it's the end of the semester, and they're failing because they didn't do the work. On a discussion forum, they are to write an email to the professor to argue why they should pass the class anyway, using at least four fallacies from the lecture. Importantly, students are told to have fun, an instruction many of them heed quite well.

Consider the following "email":

> Hey Prof Trecek-King,
>
> So, I couldn't help but notice you gave me a 34% for the year, and see, I'm gonna need you to bring that grade up a little bit. The reason my grades have been slipping lately is actually because my uncle's friend's kid's dog just had babies, and one of them got hit by a car. My car. I accidentally killed my uncle's friend's kid's dog and now my uncle's friend's kid is depressed, which honestly has been weighing on my heart lately. Also, other than that, if you fail me in this class then I'm not gonna get into the graduate school I wanted to get into, and I'll never be able to get my doctorate and then even more people will die. If you fail me in this class people WILL die and it will be your fault.
>
> The way I look at it is like this, why would you give me a failing grade? Yeah, I didn't do any of my homework but there are homeless people. Literally homeless people. Everywhere. You should put more of your focus and energy on that if you really care so much. I even asked my mom and dad if they think my final grade is fair, and they agree with me. It's not fair. So, anyways PLEASE update my grade and I would appreciate it sooooo much. Thank You.
>
> Science for Life Student

After their initial post, students identify and explain fallacies other students used in their emails. In this case, students

Figure 1: Example of a social media advertisement employing the techniques used to sell pseudoscience (Trecek-King 2022c)

correctly identified the fallacies committed: slippery slope, red herring, appeal to emotions, and appeal to authority. Other commonly used fallacies include cherry picking, appeal to the masses, false choice, and *ad hominem* (with some pretty hysterical attacks on my character). This assignment is used concurrently with the Cranky Uncle game, which uses cartoon humor to teach players the fallacious techniques used to deny science (Cook 2021; Cook et al. 2022; Cook 2022).

In my experience, this assignment successfully teaches students how to recognize fallacious arguments because they use fallacies to argue for a topic they can relate to. In the debrief, I laud their efforts at creating fallacious arguments and thank them for making me laugh.

Inoculation against Health Misinformation: 'Selling Pseudoscience'

Health pseudoscience is ubiquitous. From "energy" medicine to homeopathy to detoxing (and so much more), it's impossible to address all claims. But like most forms of misinformation, there's a consistent pattern of techniques used to mislead. Despite the many pseudoscientific health products and treatments, what they're really selling is a false sense of hope and empowerment. And what better way to learn how our desire to be healthy can be used to manipulate us than to pretend to be a grifter and sell your very own snake oil?

After learning about the characteristics of pseudoscience and common selling techniques (Trecek-King 2022c), students create an advertisement for a pseudoscientific health product. They are told they've been hired by the Beautifaux Company to create a social media advertisement for one of their latest products, either a diet pill, a muscle-building supplement, or a sexual enhancement treatment. (Alternatively, students are told if they have another product or therapy in mind, they can let their imagination run wild, although they must first get my permission.) Students then give their product a catchy name and design their advertisement for their favorite social media platform, such as Twitter (a.k.a. X), Facebook, Instagram, or TikTok. Along with their advertisement, students must specify the characteristics and selling techniques they used. They are then graded on creativity and use of techniques.

Students often get very creative with this assignment (especially those who opt to create ads for sexual enhancement products!). But most importantly, they learn key strategies used by pseudoscience promoters to hawk their products: make vague claims, overpromise with "miracle cures," confuse with meaningless technobabble, use anecdotes, rely on logical fallacies (e.g., appeal to nature and tradition), and manufacture the illusion of expertise/authority.

Inoculation against Conspiracies: 'Wake Up, Sheeple!'

Conspiracy theories are attempts to explain events as the secretive plots of powerful individuals or groups (Lewandowsky and Cook 2020). Believing in a conspiracy theory's simple narrative can provide a sense of control and understanding, especially in times of uncertainty. Conspiracy theories are also the Get Out of Jail Free card for science deniers and pseudoscience promoters—how else could you explain why nearly all scientists disagree with your position?

Many students (indeed, many people) believe in some kind of conspiracy theory, so it would be nearly impossible to cover them all. Plus, a new one could pop up at any moment. A more effective solution is to inoculate students against the techniques used by conspiracy theorists by having them create and defend their very own conspiracy theory.

I start by introducing the satirical "birds aren't real" conspiracy theory, which claims all birds in the United States were killed by the government and replaced with drones to spy on Americans. This example is nonthreatening (and hysterical), which helps students learn the characteristics of conspiracy theories. (Followers of the "birds aren't real" movement are all in on the joke, and by using conspiratorial techniques to perpetuate the narrative they are essentially inoculating themselves against conspiratorial thinking.)

Students are then put into groups and instructed to design a fictitious conspiracy theory: Who are the conspirators, what did they do, and why? The wilder the better. They then must "do their own research" and find at least three pieces of evidence to support their conspiracy. (Students often ask if they must use reliable sources, offering a wonderful opportunity to discuss how our desire to believe—or not believe—can cause us to search for and accept unreliable evidence. This newfound freedom often results in students using rather interesting sources.)

After their conspiracy is complete, they must "wake up" another group and convince them that they know the "truth." However, the other group is tasked with trying to disprove the conspiracy. But whatever evidence or reasoning comes their way, the students must find a way to protect their narrative. Conspiracy theories are immune to evidence, so no matter what happens … don't change your mind.

Pretending to be conspiracy theorists is an entertaining and engaging way to teach students how conspiratorial thinking works. Following the assignment, students submit a brief write-up explaining key traits of conspiracy theories, such as unfalsifiability, motivated reasoning, cherry picking, pattern recognition, and false agency detection. In my debrief, I thank them for their creativity and humor. And as always, I remind them to use their "powers" for good and not for fooling people.

Creating Active Inoculation Activities

The above examples are just the tip of the iceberg. Like misinformation itself, the possibilities are endless. For example, I also teach students how to be a "psychic" using simple cold reading techniques. Other possibilities include having students create ghost photos or videos, write horoscopes, make deepfakes, create fake memes, hold séances, or even bend spoons.

To design a technique-based, active inoculation assignment, start with the type of misinformation and work backward to find the techniques. Then put students to work using those techniques to create their own misinformation. Complete the recipe with a heaping dose of humor!

The Take-Home Message

Misinformation has reached epidemic proportions. It's simply not possible to debunk every false claim that comes our way. A much more achievable solution is to inoculate enough citizens against broad categories of misinformation to achieve a form of herd immunity. In particular, the technique-based form of inoculation has been shown in lab experiments to generalize across topics (Cook et al. 2017), although testing whether classroom activities generalize to new threats outside the classroom is a topic for future research. Inoculating students won't be easy—critical thinking is challenging and effortful—but the alternative is surrendering to the infodemic.

Educators are on the front line of this battle and play an essential role in preparing young people for an ever-changing information (and misinformation) landscape. Inoculation theory—and the growing body of evidence to support its effectiveness—offers hope. Instead of addressing false claims as they arise, technique-based, active inoculation activities offer broad protection against common strategies used to mislead.

In my experience, inoculation activities are fun and engaging … and effective! As one student said, "Once you can 'see' the techniques, you can't 'unsee' them." ■

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Communities of Inquiry as a Tool to Foster Critical Thinking

The concept of a "community of inquiry," created by philosopher Matthew Lipman, offers an example of how university courses can foster critical thinking among undergraduate students.

GUILHERME BRAMBATTI GUZZO

Critical thinking is widely regarded as one of the most important aims of education. Despite not being something new—we have great examples of critical thinking in action since at least the dialogues of Socrates—the literature on the topic was developed during the twentieth century.

One of the pioneers of this effort was John Dewey. In *How We Think*, published originally in 1910 (with a second edition in 1933), Dewey argued in favor of the development of what he called "reflective thinking" at educational institutions. According to Dewey, reflective thinking involves "active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends" (Dewey 1933, 9)—a definition that would help other authors develop the concept of critical thinking some years later.

Critical thinking is a term coined by Edward Glaser in 1941 (Dwyer 2017), developed and conceptually refined by authors such as Matthew Lipman, Robert Ennis, Harvey Siegel, Richard Paul, and Linda Elder. Lipman worked not only upon the concept of critical thinking but also managed to create ways it could be fostered in schools, especially among children.

Lipman (1923–2010) was a philosopher of education and educator who became interested in critical thinking after realizing that adults struggled to elaborate, justify, and evaluate arguments of different natures. Lipman thought that if some adults are not capable of appropriately dealing with reasons, part of the problem was with their early education, at school, when their thinking skills and dispositions could have been developed and strengthened.

In the late 1960s, pondering about the best way the teaching of critical thinking could be addressed at schools, Lipman came up with the idea of writing philosophical stories, or philosophical novels, aimed at elementary school students. Some years later, he and some colleagues at Montclair State University, in New Jersey, established the Philosophy for Children Institute, which, among other activities, developed curriculum materials and courses for teachers to disseminate philosophical education for kids throughout the world (Lipman 2011).

One of the assumptions behind the activities of the Philos-

ophy for Children program is that people think better when they are in a community. Lipman (1998, 277) emphasized the importance of what he called "distributed thinking," or "shared cognition," in which "the members of the class answer one another's questions, emulate other's questions, build on one another's inferences, furnish each other with examples and counterexamples, help others construct definitions, and so on." According to Lipman, when people can properly distribute their thinking with peers in a classroom in an organized and thoughtful way, they have an opportunity to strengthen their critical thinking skills.

Initially, the work of Lipman regarding education in critical thinking was aimed mainly at children within philosophy classes. In 1991, he published *Thinking in Education*, a treatise on critical thinking in which Lipman discussed theoretical issues on the concept, defended critical thinking as an aim of education, reflected upon some historical landmarks for critical thinking literature (such as the work of Dewey and the informal logic movement), and gave some general guidance on how we can insert critical thinking in our classes, be they philosophy classes or any other subject.

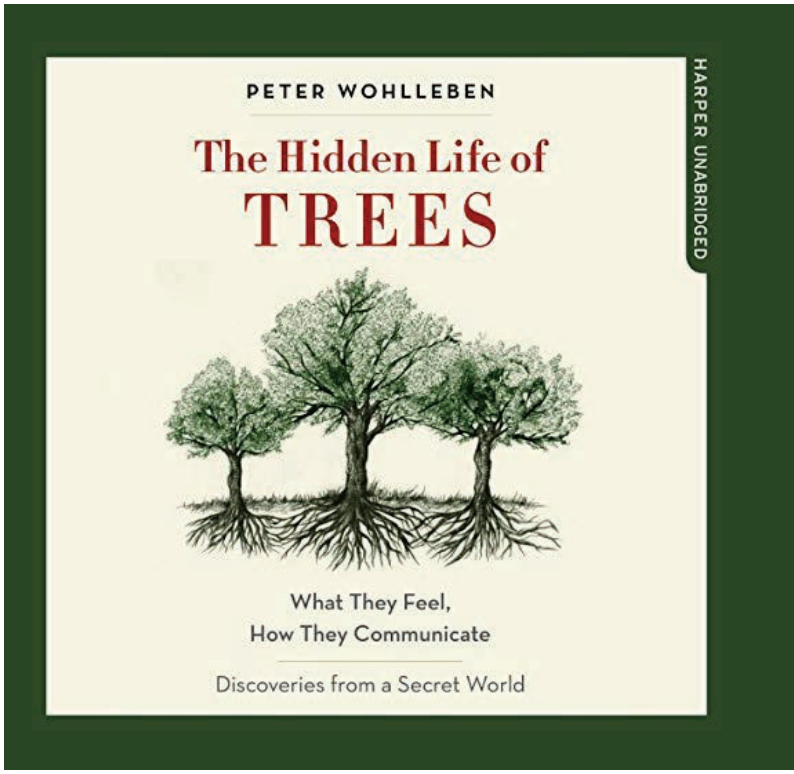
Lipman thought education should be conceived as inquiry if our goal is to develop critical thinking among students. For that to occur, students should be immersed in situations in which they are encouraged to think, solve problems, dialogue, express and ponder upon the reasons that sustain their points of view, and listen to and evaluate the reasons given by other students and their teachers. Inspired by the Socratic dialogues and borrowing the name from a concept put forward by Charles Peirce, Lipman devised the communities of inquiry.

In *Thinking in Education*, Lipman discussed and detailed what communities of inquiry are. In brief, a community of inquiry may be defined as a space in which "students listen to one another with respect, build on one another's ideas, challenge one another to supply reasons for otherwise unsupported opinions, assist each other in drawing inferences from what has been said, and seek to identify one another's assumptions" (Lipman 2003, 20).

Put that way, it seems that many teaching strategies may engage students in a community of inquiry or something similar. Lipman suggested some steps to create a community of inquiry: (a) present a text; (b) create an agenda in which the work of the community is organized by the students and the teacher; (c) strengthen the community through dialogue; (d) use exercises and discussion plans; and (e) encourage further responses (that may be texts, works of poetry or painting, or other forms of expression regarding the ideas that were addressed in the community). Lipman understood that communities of inquiry may be organized in different ways based on how they align with their original purpose.

Creating a Community of Inquiry at the University

I am an assistant professor at the Universidade de Caxias do Sul in Brazil, and in 2019 and 2020, I helped develop a discussion group based on Lipman's community of inquiry at my university. The group was named Liga Acadêmica de Divulgação Científica (Scientific Communication Discussion Group; LADiC), involved around twenty-five students, and comprised mainly undergraduates in Biological Sciences, but occasionally undergraduates from other areas of knowledge took part in our meetings.



The group started because some undergraduates complained about the lack of spaces at the university to discuss science, scientific methods, pseudoscience, and related topics in depth. Instead of organizing traditional classes or lectures to address these subjects, we decided to set up a discussion group along the lines of what Lipman proposed. With that, our aim was to learn science and foster critical thinking through dialogue, emphasizing the processes of science related to how scientific investigations are carried on, the nature of scientific evidence, what distinguishes science from pseudoscience, the role of organized skepticism in filtering ideas, and so on, rather than addressing only the products of science (such as concepts, theories, and conclusions).

In 2019, we had face-to-face meetings held biweekly, and during the pandemic, we communicated by video. Before each meeting, the participants received some popular science material to read, watch, or listen to and one or more questions related to the content and claims of the material. The material was provided by me or by one of the students, and the topic was decided by the group usually one or two weeks before the meeting. The subjects ranged from genetics, evolutionary biology, plant biology, animal behavior, neuroscience, and episodes of the history of science to myths about science and pseudoscientific topics such as UFOlogy, astrology, homeopathy, and cryptozoology.

During the meeting, the participants first discussed general

aspects of the material itself (e.g., its readability and target audience). Then, they proceeded to analyze the questions that were posed initially. The objective of the community of inquiry was to have the students engaged in a thoughtful dialogue about the meeting's topic. Questions such as "How do we know it?"; "What is the evidence presented in support of this claim?"; and "How good is the evidence?" were always addressed, and the students were encouraged to share their conclusions and the reasoning behind them.

As one example of the kind of topic addressed, in one meeting we reflected upon two chapters of the popular best-selling book *The Hidden Life of Trees* by German forester Peter Wohlleben. In the book, Wohlleben uses language that is strongly anthropomorphic to describe the behavior of trees, attributing to them some extraordinary capacities, such as being able to cultivate "friendship," feel "anxiety," and plan "ahead to promote the optimum environment to guarantee their longevity" (Kingsland 2018; Popkin 2016).

The participants read the assigned chapters, but they were also encouraged to read other material regarding tree physiology. The conversation began, and we addressed some questions: "What are the main claims made by the author? How does he back them up?"; "How can we evaluate these claims?"; "To which extent do these claims stand against the positions of most experts in the area of plant physiology?"; "How confident can we be that the author's conclusions are correct?." After pondering these questions, we could appreciate some valid points in the author's arguments and the (many) mistakes or misconceptions he presented with overconfidence as if they were "settled science."

Lipman correctly reasoned that the fact that a dialog is happening does not guarantee the people involved are strengthening their critical thinking skills and dispositions. There must be some kind of internalization "whereby participants introject the behaviors of others whom they wish to emulate" and externalization of good thinking habits, "whereby participants synthesize what they have introjected and offer these newly created syntheses to the group" (Lipman 1998, 277). In other words, we must see critical thinking in action to know it has been nurtured in a community of inquiry.

We could see many instances in which critical thinking was being properly exercised by the participants of the group. The habit of making qualified questions to clarify and explore the topics of the discussions was ever present in the meetings, and the same happened with the inclination to ask for and give reasons to substantiate claims. Regarding reasons, it is noteworthy that the participants were committed to supporting their ideas and evaluating them with relevant reasons to avoid making claims that went beyond the evidence.

The terms the participants chose to refer to scientific studies and scientific data were refined during the meetings. Words such as *indicate*, *suggest*, and *strongly support* were heard more often than absolutist terms such as *proved*, indicating that the students comprehended the role of fallibilism in science. More than that, the participants understood that we need to calibrate the confidence we have in a certain belief to the quality of evidence there is for it.

Additionally, some students created parallel activities that involved the community outside the university, such as online courses about critical thinking, the nature of science, and the importance of basic science. These activities were inspired by the discussions they had in the community of inquiry.

The development of communities of inquiry, at different educational stages and in different areas of knowledge, is a tool that schools and universities may use to help people become more thoughtful, aware of their own thinking processes, and more epistemically responsible. In other words, they may help students to become better critical thinkers. ■

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Image credit: Sueddeutsche Zeitung Photo / Alamy Stock Photo

Adolf Hitler's Personal Charlatan

EDZARD ERNST

For treating his numerous ailments, Adolf Hitler would have, of course, been able to consult Germany's foremost medical experts of his time. For his personal doctor, however, Hitler chose a relatively poorly qualified, alternative physician of doubtful repute.

Theodor Morell was born on July 22, 1886, as the second son of a schoolteacher in a small village in Hesse. After school, he trained and subsequently worked for one year as a schoolteacher. He then studied medicine in Heidelberg and briefly worked in Grenoble and Paris before commencing training in obstetrics and gynecology in Munich.

By 1913, Morell was licensed as a medical practitioner and worked as a doctor for German cruise lines before buying a practice in Dietzenbach near Offenbach. During World War I, he served at the front and thereafter as a prison medical officer at Ohrduf. In January 1919, he moved to Berlin where, one year later, he married the wealthy actress Johanna Moller.

Morell set about establishing a fashionable, unconventional practice where he successfully attracted many VIPs from Berlin and beyond. By 1932, he was earning the equivalent of approximately 300,000 Euro per year in today's money. The letter head of his stationery announced "X-rays, high frequency, diathermy, radiation, galvanic treatments, urinalyses, and blood serologies."

In April 1933, Morell joined the Nazi party—mainly because he had recently been mistaken for a Jew. By 1935, he had moved his office to the prestigious Kurfürstendamm in Berlin. His name plate identified him as a venereologist, a specialist in sexually transmitted diseases. In spring 1936, Morell cured Hitler's photographer Heinrich Hoffman of gonorrhea. The photographer's secretary and model was Eva Braun, the young woman who also was Hitler's secret mistress.

In 1936, Hitler was suffering from chronic eczema, recurrent abdominal spasms, exhaustion, and periods of depression. Hoffman recommended Doctor Morell and arranged a personal meeting between the two. Morell then visited Hitler in Berchtesgaden. Morell's treatment was successful, and Hitler invited him to become his full-time personal physician. Morell accepted against the wishes of his wife. From then on, Morell was almost constantly at Hitler's side. He later boasted that nobody, not even Eva Braun, had spent more time with the Führer.

The promotion had considerable advantages for Morell, not least financially. He kept his Berlin practice, which he delegated to assistants. He drew a substantial salary, amounting to five times that of a university professor, and he received a large, tax-free lump sum from Hitler for buying a Berlin villa that had just been confiscated from a Jewish banker. In addition, Hitler arranged an honorary professorship for Morell, who was able to use his good connections to become owner of or partner in several pharmaceutical companies. His total wealth would eventually be estimated at six million Reichsmark.

The obese and unhealthy Morell is said to have been highly unpopular among the Führer's entourage, especially among the other doctors at the Führer's headquarters. He was considered scruffy and unhygienic and was said to have

a pungent body odor of which Eva Braun once complained. Attempts to oust Morell by other physicians who were concerned about the deleterious impact of his bizarre treatments on Hitler failed because of the near blind faith the dictator had developed in his personal doctor.

The unorthodox—today we would say alternative—treatments that Morell gave to Hitler included:

- Argentum nitricum;
- Franzbrandwein;
- Camomile tea enemata;
- Probiotics;
- Various belladonna extracts;
- Nux vomica;
- A naturopathic compound of bile extract, angelica, aloes, papaverine, caffeine, and pancreatin;
- An injectable compound of enzymes, amino acids, and vitamins B1, B2, and C plus extracts of cardiac muscle, suprarenal, liver, and pancreas;
- A mixture of strophantine, glucose, vitamin B, and nicotinic acid;
- Homeopathic strophanthus gratus;
- Preparation made from animal glands, livers, and other organs;
- Vitamins A, D, and B12; and
- An enzyme extract from Aspergillus oryzae.

In addition, Morell administered an impressive and growing list of powerful conventional drugs, including opioids, amphetamines, hormones, sedatives, and steroids. It is thought that, at one stage, Hitler took over eighty different drugs. Consequently, Hitler became increasingly drug dependent, and his health deteriorated sharply. Moreover, several of his health problems at the time might have been caused by adverse effects of or interactions between multiple medications.

Of particular interest is Morell's liberal use of a drug called Eukodal (oxycodone), which had been developed in 1916 by scientists at the university of Frankfurt (see sidebar). Morell used it in increasingly high doses (up to four times the recommended dose administered intravenously) and even combined it with cocaine when Eukodal had lost its power. This mixture is known to cause several of the conditions that affected Hitler in his final months, including coronary heart disease, constipation, anxiety, irritability, memory loss, psychosis, and depression.

After the assassination attempt of July 20, 1944, Hitler degenerated into a physical and mental wreck. He relied on Morell's stimulants to function during the day and on his sedatives to sleep at night. He had been diagnosed as suffering from coronary heart disease and had suffered several minor cardiac events. Morell's treatments were symptomatic at best and harmful at worse.

Shortly before his suicide, Hitler fell out with Morell and even threatened to have him shot. He then ordered Morell to leave the bunker, and Morell managed to fly out of Berlin. He was, however, discovered in Bavaria by a journalist of the *New York Times* and subsequently imprisoned by U.S. troops.

For two years, he was interrogated for war crimes and (according to Morell) tortured. Being unwilling to provide relevant information, he was eventually released. Meanwhile, his health had deteriorated significantly; he was said to suffer from aphasic speech disorders and was taken to the district hospital of Tegernsee south of Munich, where he remained until his death on May 26, 1948.

Most biographers of Hitler seem to think that Morell's influence on Hitler and the Third Reich was negligible. Yet a review of Morell's treatments suggests a different conclusion. Morell's medical incompetence turned Hitler into a drug addict and subsequently into a physical and mental wreck. It seems, therefore, hard to imagine that Morell did not have a major impact on the history of the Third Reich. ■

Oxycodone was developed in 1916 by scientists at the university of Frankfurt.

It is a strong, semi-synthetic, and highly addictive opioid.

Today, it is sold under various brand names, such as Roxicodone and OxyContin.

Its main indication is moderate to severe pain.

Oxycodone became the focus of the U.S. opioid scandal. In 2007, Purdue Pharma was fined $634.5 million for failing to adequately label in the package insert of OxyContin that oxycodone has a high addiction potential. For its part in the spread of the drug, the consulting firm McKinsey agreed to pay $573 million.

In 2011, oxycodone was the leading cause of drug-related deaths in the United States.

In 2020, oxycodone was the fifty-fourth most commonly prescribed medication in the United States (more than twelve million prescriptions).

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What's the Harm in Having Alternatives in Medicine?

KAT MCLEOD

Whenever I hear someone mention *alternative medicine*, I have an immediate negative response. However, I try to remain calm while also trying to persuade the person to seek actual medical help instead. As skeptics, we are usually very leery about "woo," but that doesn't mean we aren't susceptible to being fooled, hoodwinked, and conned. When I went down the natural health product path, the industry was not regulated in Canada (and it still isn't in the United States except for products that fall under the Dietary Supplements Health Education Act). Natural health products became regulated in Canada in 2004; however, an audit completed in December 2020 by the Office of the Auditor General of Canada (Government of Canada Auditor General 2021) shows that products are still unsafe and untested, yet 70 percent of Canadians consume them. Natural health products are considered "lower risk"—but that doesn't mean they are safe.

When I was twenty-one, my doctor wanted to put me on oral steroids for my asthma; I was hesitant because I had seen steroids cut my grandmother's life short. A close friend of the family recommended I see her herbalist. She and her family had been seeing him for ten years, and he was the biggest herbalist in my city, having practiced for over twenty-five years. I thought it couldn't hurt to see what he had to say; I was so wrong. I was fascinated by how he could tell things about my health just by feeling different pulse points. He had been in the game longer than I'd been alive and had honed his craft. He was sure he could help me with my asthma and sent me home with a large bag full of loose herbs and instructions on how to boil and consume them. I went home, followed the instructions, and tried to drink the tea. It was so bitter I couldn't swallow more than two sips. I went back to him, and this time he "prescribed" several herbs in capsules that I could take instead. I read up on all the different things he recommended and researched how they might interact with other herbs, so I *thought* I was making an informed decision.

The capsules worked! For the first time in my life, my asthma wasn't an issue; I could be as active as I wanted without needing my inhaler. Four months into my herbal experience, I found myself breathing well but gaining weight disturbingly fast despite eating less and exercising for at least two hours a day every day. I asked the herbalist about it; he sold me more herbs. I asked my doctor about it, and she told me she didn't know what could be causing it, suggested I stop taking the herbs to "see what happened," and ordered some labs. I didn't stop taking the herbs because they seemed to be working (and had I listened to her, I may have died due to stopping so suddenly). Those lab results led to more tests and then more. I was having blood draws and lab tests every few days for the next six months. I was dizzy with the number of specialists I had been referred to; none of them had answers. I participated in a medical teaching session, where over fifty doctors from around the world came to examine me and review my case, to no avail. They had ruled out many diseases and all kinds of cancer, but they didn't have any answers.

Figure 1. Asthma Wan is the herbal supplement that was tested by the doctors.

I was desperate for answers, so I started reading medical textbooks and figured I had Cushing's disease—which was confirmed shortly thereafter when I met with an endocrinologist. They weren't sure why I had developed secondary Cushing's disease but at least I had a diagnosis. One day my

endocrinologist was having lunch with a pediatric specialist, and they were discussing their difficult cases. The pediatric doctor had three mysterious cases who didn't have the same symptoms as each other, but I had all the symptoms of all three of his patients; it turned out we were all taking the same herb (Asthma Wan), only I was taking a much higher dose. My endocrinologist asked if he could test the capsules I was taking, and it turns out they had an ingredient not listed on the packaging—cow gallstones—that were acting like a cortical steroid twelve times more potent than prednisone. I was taking nine pills a day, the equivalent of 108 prednisone daily. Mystery solved; now they had to figure out how to wean me off without killing me.

As soon as I learned it was the herbs making me sick, I informed the herbalist—who continued to sell them. I consulted a lawyer but was told because natural health products weren't regulated in Canada, my only option would be to sue the government. The doctors told me I wouldn't live long enough to see that to fruition; I opted to work with Health Canada to have regulations put in place instead.

I was told that the damage to my adrenal glands and other organs was permanent; the doctors weren't sure how I managed to survive and didn't think I would live more than a few more years. I went on a campaign to spread awareness, talking to everyone about the dangers of herbal "remedies." I was invited to speak at the University of Alberta to pharmacy students, which I did every term for a decade, alongside a representative from Health Canada. I mentor medical students and healthcare practitioners to this day. I will always deal with the consequences of my mistake, but hopefully I can be a lesson to others.

Herbalists, naturopathic "doctors," and the like bilk people out of millions of dollars each year. I am not the only one who has been harmed; thousands have, and some lost their lives ("What's the Harm in Herbal Remedies?" 2010). One of the outcomes that Health Canada agreed to after the audit concluded was including natural health products in the Unsafe Drug Act (Vanessa's Law) (Osman 2023). Two years later, this is finally being undertaken, causing upset for some supporters of alternative remedies (Harding 2023). This industry is poorly regulated, and in many countries, it relies heavily on manufacturers/sellers to self-attest to efficacy and report any adverse reactions. In a recent episode of CBC's show *The Current*, naturopathic doctor Dugald Seely from the Centre for Health Innovation stated that "in 2017 only 0.9% of adverse reactions reported in Canada were from [natural health products]" (Galoway 2023), which gives an illusion of safety, when in fact it is evidence of under-reporting. Health Canada states that only 41 percent of people who experience an adverse reaction report it (Government of Canada 2016). Some people may not realize that *it is the natural health product causing the reaction*, because there are not enough studies to understand the full scope of the risks or how products may interact with prescription drugs or food (e.g., how some antihistamines interact badly with grapefruit juice).

Consumers equate "natural" with being safe; snake bites are natural, yet I wouldn't recommend them. The healthcare system has been overburdened for too long, and many people don't have a family doctor or are frustrated by long wait times, lack of empathy, and so on, leaving them to seek alternatives. Therein lies the danger. Currently, there are no consequences for products that lack efficacy, and most adverse reactions are unreported. Even when serious adverse reactions are reported, according to the audit, it does not mean that the product won't continue to be sold without any warning to the consumer, simply because the manufacturer fails to comply. Products are widely available online, in retail stores, and in grocery stores. So long as there is a misconception about safety, people will continue to be hurt. ■

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Kat McLeod hails from Edmonton, Alberta (Canada). She is an atheist who is passionate about dispelling misinformation, especially regarding alternative "medicine." When not working at her day job at the University of Alberta, she volunteers to mentor medical students, creates art, and enjoys mingling with other like-minded skeptics and heathens. Writing and photography have been lifelong passions; she self-published a book in 2006.

The Dangers of Unregulated 'Healthcare'

KATIE SULETA

Thanks to the scientific method, we can now expect to live decades longer than people did 200 years ago (Johnson 2021). By taking the knowledge that was gained through scientific research and turning that into education, standardized practice, and required oversight of healthcare activities, we have raised the bar of life expectancy overall. Healthcare today has turned into a compilation of regulated, standardized activities performed under the surveillance of federal agencies, accrediting bodies, ethics boards, etc. These standards, regulations, and oversight have played an important part in advancing healthcare. However, not all parts of the healthcare sector are subject to such scrutiny and standards, which poses a danger.

Nutritionists, dietary supplements, and health coaching exist outside of the carefully regulated and monitored world of official healthcare, yet all play a key part in the health of people and their experience of healthcare. It's time that clinicians, researchers, scientists, and the public understand the dangers posed by these sectors and others operating outside of established, necessary guardrails (i.e., regulations, standardization, and oversight) and push back on these trends.

Physicians are required to complete medical school and residency, pass board exams, maintain licensure, complete continuing medical education units, and practice within the confines of the law. Nurses have similar requirements and guardrails. Hospitals have standards set and dictated largely by the Centers for Medicare and Medicaid Services, which often works closely with The Joint Commission, the body that oversees, regulates, and provides accreditation to hospitals and their processes and functions (Joint Commission FAQs n.d.; Joint Commission on Accreditation n.d.). Drug companies are subject to oversight by the Food and Drug Administration, which sets standards and regulations for the industry to keep the public safe (Office of the Commissioner 2022). The list of the different ways that healthcare requires and implements oversight, regulation, and standardization goes on and on—all in the name of providing better, safer care.

These guardrails help keep the public safe, establish a higher standard, and don't require the average person to be an expert in healthcare training, titles, and vernacular. However, when these rules break down or loopholes are exploited, danger lurks. As an example, consider this thought experiment: John, a middle-aged man, goes to see a physician. When the physician comes in the room and greets John, the two exchange pleasantries for about thirty seconds before the physician asks, "What brings you in today, John?" John lists his health complaints that led him to make an appointment. "What medications and supplements, including multivitamins, are you taking?" his physician asks. That. That right there. If you break that sentence apart, there are two components to it: medications and dietary supplements. Medications are regulated by the Food and Drug Administration. Research is constantly conducted and updated on drugs. There are rules and regulations to ensure standardization. The moment any of that breaks down or a discovery relating to a negative effect of the drug is made, recalls can be issued. Thanks in large part to the Proxmire Amendment and The Dietary Supplement Health and Education Act of 1994, dietary supplements are not regulated (Office of Dietary Supplements n.d.; Sen. Proxmire 1975). Yet physicians still need to know what dietary supplements a person may be taking because they may interact with other prescribed, regulated, tested, and standardized medications. Additionally, they may harm a person's health through allergic reactions, contamination, etc.

John mentions to his physician three dietary supplements, including a multivitamin, he is taking in addition to his prescribed medications. He also reveals that that the dietary supplements were recommended to him by a nutritionist and health coach he has been working with. Pause. Nutritionists are often confused with registered dieticians. Registered dieticians have credentials, training, etc., and the title is protected (Commission on Dietetic Registration n.d.). A person cannot claim to be a registered dietician unless they have completed and passed the necessary education, training, and exam. The title of "nutritionist" is often not protected (Wartenberg 2020). It often does not require any specific education, training, or exams, and as a result anyone can claim to be a nutritionist.

Similarly, the title "health coach" is not regulated or standardized (Suleta 2023). Health coaches are having a moment in the public consciousness and have been touted as The Next Big Thing in healthcare by pieces in the *New York Times* (Brody 2021), *Harvard Health* (Grinspoon 2020), and the Cleveland Clinic (Cleveland Clinic 2021). The problem is, again, that the title of "health coach" is not protected or regulated. There is no specific training, education, exam, licensure, ethics body, etc., that oversees, regulates, or standardizes health coaching or who becomes a health coach. As a result, anyone can claim to be a health coach. You may have a trained, licensed, and practicing physician who also acts as a health coach, or you may have someone with no training or education simply looking to make a quick buck. You may

have someone in between. Without regulation, oversight, and standardization, all these people can claim the same job title and description. The public is none-the-wiser because both "nutritionist" and "health coach" sound legitimate. Without oversight, these people are also making recommendations for health that may include unregulated dietary supplements that may have interactions with prescribed medications.

Roughly two minutes into his appointment with his physician, John has already mentioned three unregulated areas of healthcare with which he has been regularly interacting. It is common for people to pretend that these areas are not "real healthcare." However, they impact healthcare and people's experience and need for it directly. To pretend otherwise would be naive and unethical. We must enact policy that addresses these loopholes. Without it, charlatans, grifters, and well-intentioned but untrained people will participate in spaces where others lionize them as experts. This puts the public in real danger of exploitation and adverse effects on both their health and their wallet. Without these guardrails in place for all arenas of healthcare, we are reverting to the days of snake oil salesmen and traveling medicine shows. The stories of those days are cautionary and legendary for a reason. We should take heed and act now. ■

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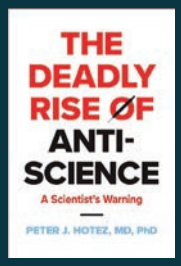
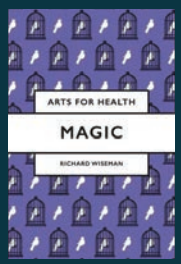
NEW AND NOTABLE BOOKS]

Edited by Stephen Hupp. Listing does not preclude future review.

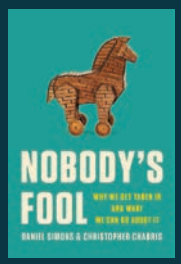


THE DEADLY RISE OF ANTISCIENCE: A Scientist's Warning. Peter J. Hotez didn't need to debate JFK Jr. (or Joe Rogan for that matter) because everything he needed to say was already written for this book! Johns Hopkins University Press, 2023, 240 pp., $24.95.

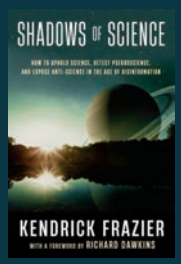


MAGIC (Arts for Health). On the heals of winning the David Attenborough Award for promoting critical thinking, Richard Wiseman also just published this new book about the intersection of magic and wellbeing. Emerald Publishing Limited, 2023, 123 pp., $24.99.

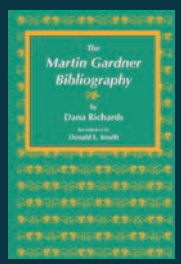
EVERYBODY'S MAGIC! A community youth development organization in South Africa, the College of Magic, partnered with Richard Wiseman to publish this booklet (and deck of cards) for young magicians with all the the proceeds going to the nonprofit organization. Vanishing Inc., 2023, 25 pp., $25.00.



NOBODY'S FOOL: Why We Get Taken in and What We Can Do about It. The same team who wrote *The Invisible Gorilla*—Daniel Simons and Christopher Chabris—share more about deception in their latest book. Did you notice the back-to-back use of the word *the* in the previous book description? If not, you're not alone. Basic Books, 2023, 336 pp., $30.00.



SHADOWS OF SCIENCE: How to Uphold Science, Detect Pseudoscience, and Expose Antiscience in the Age of Disinformation. Capping a lifelong career dedicated to science, Kendrick Frazier gifts us this book exactly when we need it the most. Prometheus Books, 2023, 304 pp., $26.95.



THE BIBLIOGRAPHY OF MARTIN GARDNER. Edited by Dana Richards, this bibliography "draws on the two hundred boxes of Gardner's mathematical papers held in the Stanford archives." (And by the way, did you catch the hidden reference to Martin Gardner in the season 9 finale of *Penn & Teller: Fool Us*?) Center for the Study of Language and Information, 2023, 464 pp., $37.50.

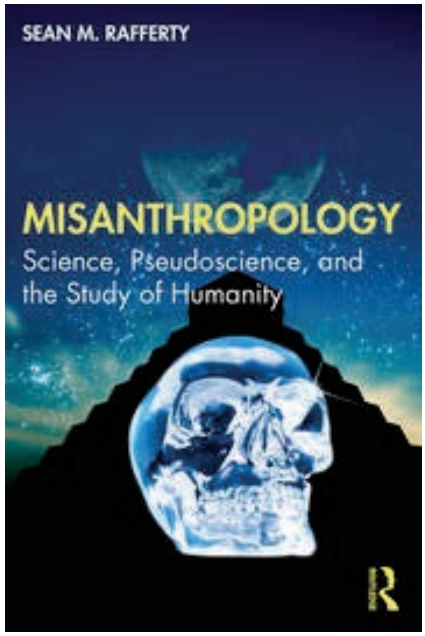
Unmasking Misanthropology

Peter Huston

Misanthropology: Science, Pseudoscience, and the Study of Humanity by Sean M. Rafferty, an anthropology professor at the University at Albany, is intended as an introductory textbook to teach anthropology students the difference between scientifically valid, accepted anthropological practices and nonvalid pseudoscientific practices seen in (or mistaken for) anthropology. Although the explanatory and theoretical portions are dense reading suitable primarily for students or specialists in the field, most of this densely packed and carefully footnoted but thin book are examples of problem claims and reports. These are written in a more accessible style and should be of interest to skeptics and others outside of anthropology.

Chapter one, titled "Bias and Fallacy in Anthropology and Beyond," explains that in the American tradition, the field of anthropology has four subfields: cultural anthropology, biological anthropology, archaeology, and linguistics. Following an introductory chapter that explains the goals, themes, and scope of this work, Rafferty surveys these fields giving each a chapter or two where he explains the subfield, defines it, and explains its scope of study and focus. He then follows with examples where things went wrong and how work that should not have been accepted somehow caught the attention and imagination of the public—usually to the horror of most professional anthropologists.

In the section on cultural anthropology, Rafferty focuses on problems relating to seeking "pure and unspoiled primitive cultures" for study. While early anthropologists originally wanted to study cultures that had been entirely unsullied by contact with the outside world, Rafferty makes it clear that finding such cultures is virtually impossible.



Misanthropology: Science, Pseudoscience, and the Study of Humanity. By Sean M. Rafferty. New York, NY: Routledge, 2023. ISBN-978-1032231778. 183 pp. Paperback, $44.95.

Yet observers' reports and perceptions are often distorted by what they hope to find, even in the science of anthropology, and many still seek entirely insulated cultures.

His example is a lengthy piece on the eager reception of the announcement in 1971 of a "lost tribe" discovered in the Philippines. The Tasaday were not only completely unknown and uncontacted but had no word for war, no weapons, and lived in peace. To a world weary of war and violence, the implication that this could be the natural or original state of mankind was very exciting. Alas, ultimately evidence indicated the Tasaday were not a lost tribe at all but a group of impoverished farmers recruited and coerced by a corrupt local official to scam foreigners. Rafferty tells the story and details how several red flags were ignored by anthropologists, journalists, and laypeople. Conversely, he describes how the depiction of the Yamomani, an Amazonian tribe, is distorted by many—but in this case often unfairly portrayed as an innately savage race of jungle primitives, the stereotype many of their neighbors hold of them.

And then there's Carlos Castaneda; no book on anthropological hoaxes would be complete without some discussion of Carlos Castaneda, Don Juan, the Yaqui way of knowledge, and all those hallucinogenic drug trips he wrote about. Castaneda not only perpetrated one of the most prominent hoaxes in New Age circles and made a career of exploiting people who believed it, but he also received a doctorate from UCLA in anthropology using the hoax as his doctoral dissertation.

Two chapters are devoted to linguistics and language issues. The first discusses claims of language ability by animals, why these do not stand up, and what is revealed when anthropologists endorse and publicize the claims. His first example is Clever Hans, a horse that appeared to do simple arithmetic by stomping its feet in answer to questions such as "What is six plus three?" It is now believed that Clever Hans picked up on cues from the audience, stomping its foot until their reactions changed, and he had the ability neither to do arithmetic nor to understand the questions. A great deal can be learned from the case, however, about the behavior of humans anxious to see something wondrous.

The second discusses cases where scientists feel they have established communication with apes, normally using sign language. Rafferty debunks these claims and examines the ethical issues involved in using great apes as experimental animals and restricting access to the apes, thus impeding verifi-

Wilhelm von Osten and Clever Hans

cation of the findings.

The next chapter is on troubling examples of pseudolinguistics, cases where false claims of language history, language use, or shared vocabulary and other alleged connections between languages were used to advance nationalist, ethnic, or racist agendas. The examples chosen are misrepresentations of the Turkish language in the early twentieth century to advance the cause of Turkish nationalism and modernization; claims that alleged shared vocabulary shows that Africans crossed the Atlantic Ocean and were a major influence, perhaps founders, of the Olmec civilization in Central America; and the Kensington Runestone that allegedly shows proof that the Vikings reached Minnesota in medieval times and left evidence of their hazardous journey carved in stone in their language. As well as presenting facts, there are also nice discussions of the sometimes complex political and ethical issues surrounding such claims.

Rafferty devotes a chapter to biological anthropology, the subdivision of anthropology that deals with human origins and evolution as well as human biological variation. This chapter dissects and debunks the aquatic ape theory, a fascinating yet evidence-free and discarded theory that *homo sapiens* had aquatic mammalian ancestors.

Archaeology is the sub-branch of anthropology that involves digging through other people's old trash and discarded junk, at least according to my memory of a talk given by anthropologist Ken Feder more than a couple decades ago. Undoubtedly one of the most popular and pervasive pseudo-archaeological beliefs in our society today is the ancient astronaut and ancient aliens claims. While at first it's easy to dismiss these as harmless fun, it's my belief that they do need to be confronted, analyzed, and the more mainstream explanations for the claims made offered to the public. Without naming names, we live in an era where several prominent politicians and political extremists are dismissive of scientific expertise, scientific conclusions, scientific consensus, and education in general. Speaking anecdotally, it seems to me there is a greater tendency to believe in quack archaeology and other pseudoscientific claims among people who hold dangerously extreme political views, and it can't hurt to try and educate them in why and how science, including archaeology, works and why and how people who are informed and educated in the field hold the views they hold.

Rafferty also spends time focusing on misattribution of archaeological sites in Africa during the Colonialist era when white explorers were quick to dismiss the notion that impressive ruins found in Africa might have origins in local African cultures; instead they tended to attribute them to Ancient European or biblical cultures.

Of particular interest to me was a section on Gustaf Kostina, an early German anthropology professor who lived from 1858 to 1931. He had a nationalistic tendency to overstate and misattribute European archeological sites and findings to showcase and exaggerate the origins and importance of early Germanic culture and peoples. His work dovetailed with and contributed to the rise of Nazi racialist Aryan ideology. Although the role of historical scientific ideologies in this rise interests me greatly, I had never heard of Kostina.

In conclusion, Sean Rafferty's *Misanthropology* delivers what it promises: an introductory textbook for differentiating between science and pseudoscience in anthropology illustrated with interesting examples of its lessons. ■

Peter Huston is the author of several books, including *Scams from the Great Beyond* and *More Scams from the Great Beyond*, bringing humor to skeptical subjects. He has a master's degree in East Asian Studies from Cornell and a second master's degree from the University at Albany in Teaching English to Speakers of Other Languages. The bulk of his skeptical writings are collected at www.hamchuckwc.com.

If You Should Go at Midnight …

Benjamin Radford

In his new book *If You Should Go at Midnight: Legends and Legend Tripping in America*, Jeffrey Debies-Carl, associate professor of sociology at the University of New Haven, examines a curious and common phenomenon called legend tripping.

A legend trip is an activity based on a preexisting narrative or legend, a "sort of quest, an attempt to find out whether a legend is actually true by investigating its claims firsthand" (5). Note that *investigating* is used in the broadest sense; that is, it doesn't necessarily imply any investigative acumen or aptitude. For this reason, many ghost hunts are in fact legend trips—though their participants rarely recognize them as such and may in fact reject the label. After all, to them it's not a folkloric legend at all; it's a (presumably? possibly?) true story about some historical event or person. Indeed, as Debies-Carl notes, "Among legend trippers themselves, there is generally an uncritical acceptance and celebration of the activity without a deeper awareness of the social or psychological processes at work during the course of their adventure" (6).

If You Should Go at Midnight: Legends and Legend Tripping in America. By Jeffrey S. Debies-Carl. Jackson, MS: The University Press of Mississippi. 2023. ISBN 978-1-4968-4412-5. 302 pp. Paperback, $30.

Though legend tripping is often associated with teenagers visiting spooky locations—say, a graveyard or a rural bridge where someone was said to have been killed and whose eerie cries can be heard on moonless nights—adults enjoy them as well. Legend tripping is also the premise of horror films, such as *The Blair Witch Project* and *Butterfly Kisses*.

One common example of a legend trip is the Bloody Mary ritual, in which children dare each other to go into a darkened bathroom and look in a mirror (sometimes lit by candles, sometimes accompanied by steam from hot water in a sink). Legend has it that if you say Bloody Mary's name a specific number of times, *something* will happen (that *something* varies by place, time, and teller). More broadly, most ghost stories and legends have (or have the potential to spur) an associated legend trip; Daniel Reed's article "The Case of the Devil's Baby of Ravenswood" (SI, January/February 2023) is one example.

Debies-Carl has appeared in these pages, most recently with his article "Pizzagate and Beyond: Using Social Research to Understand Conspiracy Legends" (November/December 2017), selected for inclusion in the upcoming Skeptical Inquirer anthology. While Debies-Carl's book's focus is folklore, readers will find many references to prominent skeptics, including James "the Amazing" Randi, Joe Nickell, Steven Pinker, Carl Sagan, Elizabeth Loftus, Stuart Vyse, and me. Debies-Carl is no armchair folklorist; he's visited myriad mysterious places, which he describes in case studies and an impressive appendix.

Though his lens is folkloric, Debies-Carl adopts an interdisciplinary approach, bringing psychology, sociology, ethnology, and investigation to bear.

Debies-Carl, like most folklorists, is far less interested in whether a given legend is true than in how and why it spreads, what it means to the tellers, and so on. Nevertheless, he doesn't shy away from skepticism when warranted—though when skeptics and historians point out errors in legends, "many paranormal enthusiasts insist that it is the historical record that is in error, not their experiences" (162). The author notes that "When people put their minds toward finding something, they tend to find it—in their minds if not in the external world. Thus, when witch finders set their minds to tracking down a witch, they typically find one, and when frightened townsfolk exhume a body in search of a vampire, they usually unearth the desired evidence along with it" (153, internal references omitted). This of course also holds true for conspiracy theories and hauntings, wherein otherwise mundane events and symbols are reinterpreted in unusual ways.

Though some might be tempted to dismiss such legends (and the legend trips they inspire) as obviously bogus or frivolous, Debies-Carl reminds us that "Perhaps most importantly, legend tripping has been promoted by an almost endless array of 'reality' television shows, like *Most Haunted*, *Ghost Adventures*, *Ghost Hunters*, *Finding Bigfoot*, *UFO Hunters*, *MonsterQuest*, and so forth. Taken together, they represent an undeniable cultural phenomenon, indicating increasing interest and perhaps belief in the paranormal" (5). As Sharon Hill noted in her book *Scientifical Americans*, many paranormal investigators and investigation groups specifically cite these legend-tripping shows as their models and motivations for their own legend trip–infused groups.

While many, perhaps most, legend trippers do so out of fun and whimsical adventure, others have profound, even life-changing experiences—as we might expect if a pious person sincerely believes they are in the presence of a supernatural entity. The research presented in the book offers another reason for skeptics and scholars to take legends and belief seriously: They have real-world consequences, ranging from people being needlessly frightened in their own homes by nonexistent demons and curses to vandalism and even homicide. Legend tripping, after all, often involves fear, which is a powerful motivator—typically for the worse, not better. The sites of legend trips have even been mistaken by police as evidence of Satanic cult activity.

Debies-Carl proposes a three-stage model of legend tripping and devotes two chapters to each: preliminal, liminal, and postliminal stages. The details of each aren't relevant here, but overall the process begins with legend telling (hearing a dramatic story and deciding to undertake a quest to visit the site firsthand, including preparations); leaving the "real world" to engage with the legend-based supernatural one, including rituals and rites to summon the supernatural, followed by an "unexplained" encounter; and ending with a safe return and discussions about the experiences—which reinforce and perpetuate the legends. The book ends with a discussion of legend tripping as a rite of passage and looks at the future of the practice in light of changing demographics and digital media.

Casual readers are warned that *If You Should Go at Midnight* is a deep, scholarly dive into the topic. Though accessible to lay readers and light on folkloric jargon, it may be overwhelming for those seeking a general introduction to the subject. For those wanting more information, *If You Should Go at Midnight* is an invaluable resource, along with *Legend Tripping: A Contemporary Legend Casebook* by Lynne S. McNeill and Elizabeth Tucker and *Legend-Tripping Online* by Michael Kinsella.

Folklore is often invisible to those immersed in it. Many urban legends—like moral panics—are not recognized as such (and certainly not at the time); people sharing scary-but-bogus social media warnings about tainted Halloween candy, Satanic cults, or abduction rings at Target or Comet Ping Pong, for example, sincerely hold these phantom fears. *If You Should Go at Midnight* offers much for the skeptic, including insight into ghost beliefs, scientific paranormal investigation, the psychology of magical thinking, and more. ■

Benjamin Radford is deputy editor of Skeptical Inquirer.

Skeptical Inquirer
THE MAGAZINE FOR SCIENCE AND REASON
Ideological
Subversion of Science
Does Hot Water Freeze Faster Than Cold?
The Curious Origins of Post-it Notes

Climate Change and Population Growth

I greatly appreciated Robyn E. Blumner's column "The Existential Threat That Dare Not Speak Its Name" in the July/August 2023 issue. I contribute to Population Connection and Negative Population Growth, not because I think their efforts will succeed but because I would be a hypocrite if I did not. I read the book *Inferno* by Dan Brown when it was published in 2013 and was delighted to find that the suicidal billionaire villain was intent on releasing a virus that would render one-third of humanity infertile. When the movie version was released in 2016, I anticipated there would finally be a discussion of why the villain thought it necessary to reduce human fertility. Of course, I was utterly dismayed at the cowardice displayed by the producers who preferred the typical trope of the villain planning to release a lethal virus (no useful discussion of why), which was thwarted by the hero. So, yes, there will be 2.5 billion humans in Africa in 2050 (up from 1.2 billion now), and if Europe thinks they have an immigration problem now … Fortunately for me, I am seventy-two years old and will not exist to participate in the misery in the second half of the twenty-first century.

Kenneth Deaton, MD
Macon, Georgia

Robyn E. Blumner's article couldn't be more on target. I'm an old man—age eighty-two—but in my own lifetime, our planet's population has quadrupled. And this span includes the most ruinous war in history and catastrophes such as China's man-made famine of the 1960s. Yet some religious organizations persist in opposing any workable birth prevention with demagogic politicians too ready to abet them. She rightly states that so many other disasters can be tracked back to too damn many people. What level of catastrophe will it take to wake these people up?

Don O'Connor
Kreamer, Pennsylvania

One article took only two pages in Skeptical Inquirer to suggest the solution to the most vexing problem facing humanity. And so few dare to write about it.

Robyn E. Blumner suggests that overpopulation is *the* waiting bomb that will do humans in. It is *the* cause of climate change, starvation, resource depletion, and virtually every major problem facing our species. It is a problem to be solved soon, the question being: How? Will it be solved by intelligent human beings recognizing and curbing our species's strain upon the resources of earth? Or will it be brought upon us by the consequences of our species ignoring the obvious?

The most obvious and dramatic consequence providing the greatest reduction in population is war, nuclear war. Anyone reading this who thinks we haven't been close to nuclear war in the past ought to study history a little more carefully. And if you can't imagine a dozen or a hundred flash points for nuclear war in the near future, then you are ignorant of current events.

There is climate change, melting glaciers and ice caps, a dozen or a hundred flashpoints at which a small climate change might produce a huge effect, such as the thawing of permafrost or the melting of ice underpinning the Arctic and Antarctic ice caps. If there is a refugee problem today, imagine the cities along the seacoasts being inundated by storms or even high tides.

Agriculture stands to lose in dramatic ways. Today we in the northeast of the United States are breathing the smoke of wildfires in Canada. That will soon be joined by western U.S. wildfires that grow in number and extent each year. The dry spells and monsoons that move around like pieces on the chess board of arable land have worried many yet only increased starvation around the world a little. Until now.

Ah, pandemics! Just one of the consequences within the hit parade of pandemic handling blunders was the interruption of supply chains. In the future, these can have severe consequences to resource manipulation resulting in starvation as well as other groovy bombs thrown into civilization.

There is no gentle way out of overpopulation. We have not taken this problem seriously. Partnered with the finite limits of resources on Earth, partnered further with the propensity of humans to war over those limited resources, portends real fireworks in our future. I am one person who did not procreate due to reading *The Population Bomb* decades ago. Alas, I am but one from a family of eight children. Two others of my siblings managed also to not procreate. I ask others around the world to join us in limiting reproduction.

David R. Southwick
Salisbury, Vermont

Robyn E. Blumner's July/August 2023 "Postcards From Reality" column is a wonderful example of solipsism wrapped in casuistry. The essential takeaway message from her column is, as satirist P.J. O'Rourke once said, "Just enough of me, way too much of you."

I expect that, if Blumner has the courage of her convictions, we will see future articles by her about acceptable scientific methods of reducing human lifespans and perhaps even reducing human population in general. Surely, she must have a world population number in mind that would be "acceptable." Eight billion? Five billion? Two billion?

Still waiting for the Malthusian Catastrophe.

William Cole
San Francisco, California

Robyn E. Blumner responds:

I wonder if Mr. Cole thinks there is any size of human population that should be worrisome? If raising concerns about the environmental impacts of the coming ten billion humans on earth is Malthusian catastrophizing, as he suggests, what about twenty billion or double that again?

It does not follow logically that a desire to stem human population growth is the same as advocating for shorter human life spans or eliminating living people. We know how to tap the childbearing brakes beneficently through incentives, education, access to birth control, and expanded economic opportunities for women.

Perhaps what is really going on is that Mr. Cole is hoping for a few more adorable grandchildren? Can't blame him there.

Post-It Notes

I really enjoyed this article about how Post-It notes originated. I was in dental practice for many years and used many 3M products. Among them were the molded face masks (sometimes referred to as monkey masks).

A salesman for 3M told me that the material for the masks was developed as a stiffening layer for ladies' bras. Unfortunately, it crackled if it was handled or squeezed. A bright spark in their "use up unwanted materials" department realized the similar shape of bra and mask and had them tested for filter strength. The material was then used for masks. I amused many patients with this story over the years. I have no idea if it is true.

Brian Westbury
London, England

Damar Hamlin

As a fan of the Buffalo Bills and Skeptical Inquirer—to say nothing of Snapcase and Slugfest—Timothy J. Redmond's article "The Real Wonder of Damar Hamlin's Story" in the July/August 2023 issue checked many more boxes than usual. I've long since abandoned the dedication to jinxes of numbers as a guiding principle of fandom, though that has been an easier path since our Bills became an actually fun, good team.

However, I am curious about a number not fully explored by Redmond: one. One, being the number of times this incident has happened on an NFL field. In Hamlin's plight, many recalled hockey's woozy Chris Pronger from the St. Louis Blues in a similar incident years ago. And youth sports have grim accounts of cardiac arrest of children in athletics. In that singular number, doesn't Hamlin's incident—and the preparation by those trainers in CPR and AED—bring some space to see magic and dream of the best in our tough, sudden moments?

Justin Kern
Milwaukee, Wisconsin

Freezing Rates of Hot and Cold Water

Hot water cannot freeze faster than cold water? Consider Zeno's paradox of Achilles and the tortoise: They're running a mile race. The tortoise has a head start of ten yards. The race starts, and in the second or so it takes for Achilles to make it to the ten-yard line, the tortoise has moved ahead by a little bit. In fact, every time Achilles makes it to where the tortoise was, the tortoise has moved ahead of that mark. Achilles can never win.

Without getting into a discussion of infinities, the paradox is unconvincing because Achilles is a different (faster) creature at ten yards than the tortoise was at ten yards. Similarly, water that has cooled from 200° F to 50° F is not necessarily identical to water that started out at 50° F. In particular, so much water may have evaporated from the hot water that its volume is considerably less than the volume of the water that started out cold. So, it's perfectly plausible that the originally hot water would freeze first in some circumstances. I don't know precisely under which circumstances this can happen, for example, details about wind, relative humidity, volume of the container that contains the two open glasses of water, etc. But it's possible.

Howard J. Wilk
Philadelphia, Pennsylvania

Many years ago, during a slow night on call on a remote military base, I decided to find out if warm water actually would freeze before cold water. There was no thermocouple or vacuum chamber, but two plastic ice trays, tap water, and a refrigerator freezer. Positioning and tray use was varied, levels were kept constant, and results were checked frequently. In all cases, when I had not been called away and could determine the results, cold water froze more rapidly than warm water. I'm sorry I did not publish those results. It might have saved a lot of trouble and expense.

Paul G. Story, MD
Montrose, Colorado

Martin Bier responds:

Thanks for your comment and for your interest in the subject. Zeno's Paradox is of course a mathematical issue. The ancient Greeks did not have our insights in series, sums, convergence, etc. So, they were struggling with it. The Mpemba Effect is purely about experimentation and observation.

Suppose I give you two cups of water, one that has been at 50° F for a long time and one that has recently been cooled from 200° to 50° F. There is no way you can figure out which is which. In each cup, the molecules move 400 m/s and collide a trillion times per second. There is no structure or "memory" that betrays the past. As I write in the article, the key to a good experiment is that you control all the variables and leave no wiggle room. If you allow for evaporation with one cup and don't allow for it with another cup, then you are no longer looking at a clean Mpemba Effect. That is why Brownridge built his setup the way he did: the vials were sealed shut and only spatially homogeneous radiative cooling occurred. No Mpemba Effect remains in a well-controlled experiment where everything is the same—except for the thing that you wish to investigate.

Ideological Subversion of Science

A few thoughts on the article by Jerry A. Coyne and Luana S. Maroja:

Gender assigned at birth is not arbitrary; it is based on best available evidence. Usually that's correct, but every scientist knows sometimes conclusions must be altered when more evidence becomes available. Some people are nonbinary and/or transgender. Why should this bother them?

They write at length about "4,000 areas of the genome associated with educational attainment" without mentioning opportunity! Did the genomes of women in Afghanistan change when the Taliban came to power and threw them out of school? Carl Sagan's parents had little formal education; Stanford neurobiologist Saul Villeda is the son of an undocumented Guatemalan immigrant who worked as a custodian. Maybe their DNA would have shown propensity to educational attainment, but isn't a big part of the difference between their and their parents academic success opportunity?

When I read *Voyage of the Beagle*, I cringed at some of Charles Darwin's comments about "natives." Like most Englishmen of his time, Darwin was a racist. That does not invalidate natural selection any more than Isaac Newton having been a very unpleasant person invalidates laws of motion. Scientists aren't saints. What is remarkable is what they can achieve despite all the prejudices of their times.

When two people with high status jobs publish a lengthy article in a national magazine claiming they are being "silenced," I am, well, skeptical.

Carol Sholin
Hayward, California

I just read the timely and critically important article, "The Ideological Subversion of Biology" by Jerry A. Coyne and Luana S. Maroja. I want to thank you for having the courage and the wisdom to publish this essay and for allowing free public access. After reading the article, I immediately renewed my subscription to Skeptical Inquirer (which had recently lapsed). Thank you again, and keep up the good work.

Russel Dorwart
Philadelphia, Pennsylvania

From the perspective of a cautious progressive and central-leaning libertarian: quite possibly the most important article I have ever read; should be widely disseminated; boldly and clearly written; urgently needed; clarion call to left-leaning intellectuals to adjust their trajectory to conform with reality; shining the bright light of reason and rationality on "wokism" and similar short-sighted, ideological nonsense—on society-eroding foolishness that cedes massive political power to conservatives. This article will doubtless elicit vitriolic pushback from left-wing extremists. Shall we tally the costs of extremism, at both ends of the spectrum? Truth, logic, reason, and the path to a better future cannot be found at the extremes. Kudos to Coyne and Maroja!

Dale K. Thurber, PhD
Endangered Species Biologist
East Carbon, Utah

I can't believe Jerry Coyne wrote "your body is designed" even as a figure of speech, when that is the point at issue. As he well knows,

evolution has no design or intentions; it just perpetuates whatever works, including (especially) reproduction.

Sexes have no external, canonical, Platonic status. They can only exist within sexed individuals, and each can only have their own sex. Of course, the great majority of sexual phenotypes cluster closely around one of the two that best work together to reproduce, but the others should not be shoehorned into a sex based on arbitrary criteria (such as gametes, which they may not produce) and must not be dismissed. The authors dismiss sex-variant people by choosing an outlier minimum number for them, but about one in 100 male-assigned babies is born with hypospadias—a penis incompletely differentiated from vulvae. Virtually all men have nipples and a verumontanum, a vagino-uterine remnant. What sex are non-gametogenic XX/XY people with mosaicism? In human society, there's more to life than reproduction.

Sex-variant people now have a voice, and what the authors call their "ideological subversion of biology" is actually their refusal to be dismissed. They have a lot at stake, since surgical assignment of them before they could withhold consent (often to a sex contrary to their adult gender—another issue), once routine, is still common.

Hugh Young
Porirua, New Zealand

Methinks Coyne and Maroja doth protest too much.

While biological science may be misunderstood by many, the authors of "The Ideological Subversion of Biology" do not convince me that the misinformed constitute a movement to subvert biology. Clearing up such misconceptions should be the mission of educators. Misconception is not subversion. Just as being called to task for what one says or writes is not persecution. It is just consequence.

The authors argument comprises six statements that are supposedly undermining the science of biology. This then is Coyne and Maroja's "Manifesto Malfeasium Biologica." It's convenient to build the strawman that one intends to destroy.

While it is true that people commonly conflate the terms *gender* and *sex*, this is hardly a subversion. If some misconstrue these words, educators should teach the accurate usage, not write heavily footnoted essays bemoaning popular misconceptions. "Sex and gender" is a touchy subject, as people are passionately attached to their sexual identities, whatever they construe them to be, and take umbrage at being told what they are. They are not out to subvert biology.

The authors present hyperbolic statements such as, "All behavioral and psychological differences between human males and females is due to socialization." This is, of course, untrue (and unprovable). But behavioral differences are indeed influenced by socialization as well as heredity. No great subversion here.

The thesis that "race and ethnicity are a social construct" has become a rather thorny narrative. Identifying genetic predisposition to disease has improved diagnosis as well as treatment in many scourges of humanity. But while advances in genetic science allow more accurate assays of heredity, these techniques have made no contribution to dismantling the racism that pervades our society. If anything, racists are quick to cherry pick hard-won genetic insights to justify their own prejudice. Educators should teach the difference between the terms *race* and *ethnicity*, rather than use them interchangeably. Educators should review the battles between genetic science and eugenics practices to teach insights into how science should and should not be applied politically.

All skeptics, I imagine, doubt any "knowledge" handed down traditionally, rather than rigorously scrutinized. But people have traditions, and people deserve respect. Negating a people's traditional beliefs, because science is better, is no way to promote science. Our job as skeptics, educators, and practitioners of science is to connect people through profound, provable ideas. Dismissing people for their traditional beliefs is effete and counterproductive.

In summation, I found the authors' contribution a richly referenced, long opinion piece. It was not an addition to the factual reports I'm accustomed to reading in this publication. At eight pages and ninety-four references, it is the longest article I can remember reading in the twenty years I have subscribed to your publication. Its length and tone would be more suitable in a peer-reviewed publication. Perhaps a journal of evolutionary biology would review it more favorably.

And to the editor: I would in the future rather read about the furtive sightings of a hoary Bigfoot, flat-earthers, young-earthers, or other-than-earthers. Please don't let my beloved Skeptical Inquirer become a platform for alarmist academics, intimidated by misinformed activists and promoting an unproven belief of a great subversion of science.

Christopher Chauvin
Rochester, New York

I found the article by Jerry Coyne and Luana Maroja very disappointing. Yes, there may be advocates of "left" positions that have off-base ideas about scientific research. But their article is essentially a recycling of stale Social Darwinist (a.k.a., "evolutionary psychology") arguments.

The phrase in their fourth bullet-point, "genetic differences in behavior," is a "tell" of Social Darwinist rhetoric. Studying genetic determinates of jaw shape, height, or rate of hair loss is one thing. Those are physical traits that can be measured and linked to genetic heritage.

But "behavior" is a much broader concept involving complex interactions with others. It is a social concept, in other words, that involves behavior in society. Defining "big ears" involves agreement on what qualifies as "big" and can be defined by physical measurements. "Arrogance" or "humility" involve a wide range of social interactions in the context of particular cultural contexts and can't be measured with a ruler.

Bruce Miller
Ried-im-Innkreis, Austria

The lead article by Coyne and Maroja on "The Ideological Subversion of Biology" and their subsequent talk on *Skeptical Inquirer Presents* raises the important issue of censorship in scientific circles by leftwing critics. Among the six fields discussed were those associated with the concept of race. The term appears to be incorrectly used by the authors.

Race, as used in the social sciences, assumes a researcher can classify humans into a small number of categories, on the order of magnitude of five. I would be surprised if biologists have another definition. For example, South Africa during the apartheid era had four groups (European, Asians, Colored, and African). The origins of the concept in biology can be traced back at least to Linnaeus in the 1700s who divided *homo sapiens* into four varieties. The authors observe that in some cases researchers can genetically identify small population groups to within 500 miles (800 kilometers). This is not how the term *race* is used.

The authors' claim that racial differences are not studied is simply false. Racial differences are discussed extensively in voting behavior, and it was often raised for healthcare outcomes at the height of the COVID-19 pandemic.

For at least this ideological group, the authors need to work with conventional definitions.

Walter Hill
Coordinator of African and African Diaspora Studies
St. Mary's College of Maryland
St. Mary's City, Maryland

Jerry Coyne and Luana Maroja respond:

We thank the readers for their overwhelming response. In addition to these letters to the editor, we received dozens of personal emails from all over the world, nearly all positive and thanking us for calling attention to these issues. We also heard from biology colleagues who will adopt our piece in their courses from the introductory to graduate level. Finally, we're gratified that our piece has generated the discussion we intended.

However, the critical letters are lacking in substantive refutations of our empirical claims. Some of the readers' concerns come from gaps in their knowledge (e.g., the connection of genome wide association studies [GWAS] to environmental variation and human behavior); some are mischaracterizations of our views (e.g., the claim that we dismiss the voice of "sex variant people"); some are concerns about "tone" (e.g., the claims our piece is "hyperbolic" and that we built a "strawman"); and, finally, some readers criticized things we never said (e.g., we feel that we are "being silenced" or we claimed that racial differences are "not being studied"). In this response, we attempt to make clearer why the intrusion of ideology in sciences concerns us. Space limitations prevent us from addressing all the readers' points, so we address those we consider most important.

To clear up confusions about heritability and the importance of environment, we address Carol Sholin's question: "Did the genomes of women in Afghanistan change when the Taliban came to power and threw them out of school?" (Her point is apparently that we don't know that phenotypes depend on the environment.) While genomes of Afghan women certainly did not change when the Taliban came to power, the environment for women was dramatically modified. Assuming Afghan women are now limited to elementary school, the association between genetic variation and educational achievement (its "heritability") would be zero. An enlightening parallel is the change in the heritability of female educational attainment during the past century. In the 1900s, heritability of that trait was close to zero for women, with differences between individuals explained mainly by their family environment (https://www.nature.com/articles/s41598-020-69526-6). Today, with the rise in opportunity, heritability of educational attainment for women has risen to about 55 percent—equivalent to that of males.

That's because as the social environment becomes more uniform, more of the variation we see between individuals is caused by genetic instead of environmental variability: heritability goes up. Further, mapping of traits to genes is possible only when the environment is relatively homogenous among individuals; this is a key reason different ethnicities have to be analyzed separately in genome wide association studies. Not only are the gene combinations different among groups, but the environment (such as culture) also differs. You cannot map groups with different gene combinations and environments in the same study—ergo the need to study different ethnicities separately.

The same logic goes for the mapping of behaviors; first the trait must be variable and quantifiable: as Bruce Miller points out, "arrogance" or "humility" are hard to quantify and have thus not been mapped. But Miller goes astray when implying that no behaviors can be measured. They can and they have been: such behaviors as same-sex attraction or various psychological variants are quantifiable, heritable, and have been mapped (e.g., tendency to drink, bipolar disorder, autism, and even aggression).

Some writers mischaracterized our motivations, especially regarding the sex binary. Contra Carol Sholin, neither of us is in the least "bothered" by people identifying as transgender or nonbinary. Our concern is the confusion produced when sex and gender are conflated, leading to the false insistence that sexes form a "spectrum" when, biologically, they are a clear binary. Even the existence of morphological intermediates (i.e., intersex individuals) does not make biological sex any less binary.

Almost all these rare cases still fall within the sex-binary and none of them represent a "third sex" (they produce no new types of gametes). While we fully agree with Hugh Young that "life is not restricted to reproduction," in the biological realm, sexes are about reproduction and are binary in both vascular plants and animals, with no exceptions to the small gamete/large gamete dichotomy that defines the sexes and explains so much about biology (e.g., sexual dimorphism).

The main reason behind our paper was a desire to correct distortions of biology that are based on ideology and incompatible with reality (e.g., a "sex spectrum"). This ideology is infiltrating even textbooks. Unfortunately, these distortions are taking hold partly because of ad hominem *accusations that chill dissent: if one does not agree with a sex spectrum, for example, they must be "transphobes." We need to push back against these mischaracterizations—one can be welcoming to gender-variant people without denying the biological reality of the sex binary.*

Some readers were concerned about our "tone": Chris Chauvin describes some of the statements we use as "hyperbolic." Surely not everyone will be equally concerned about the issues we raise, and we expect people's views about the severity of the problem will depend on personal experiences. As working biologists and professors, though, we find the ideological capture of sciences alarming, for the trends we observe are not simple "misconceptions" that can be easily corrected by a teacher. That's because these misconceptions are promoted not just by the public but also by many scientific institutions and established scientists.

As far as the term race *is concerned, we fully agree about its ambiguous nature and problematic history (and stated so), arguing that the term* race *should be replaced by* ethnicity*, which refers to geographically and genetically differentiated populations. Unfortunately, the popular as well as governmental use of* race *continues. Given that the term is still in current use, we tried to clarify that* race *is an approximation of* ethnicity *and that even the popular construal of* race*, while quite imperfect, is not wholly devoid of biological meaning.*

Finally, there are things we never said that are nevertheless raised as criticisms of our piece. For instance, we are both extremely critical of "victimhood culture" and did not argue, as Carol Sholin claims, that "we are being silenced" nor in any way do we imply that we are somehow "victims." We also never stated, as Walter Hill claims, that "racial differences are not studied" (indeed, many papers we cite focus on ethnic differences) or, as Christopher Chauvin argues, that genetic science techniques could somehow "dismantle racism."

Correction

A letter from Thomas Luther Robertson III, published in the July/August 2023 issue of Skeptical Inquirer, incorrectly stated that Arthur Conan Doyle became a spiritualist after the death of his son in World War I. In fact, Doyle's interest in spiritualism pre-dated his son's death, which was due to pneumonia, not war.

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